SEQUENCE LISTING

<110> Human Genome Sciences, Inc. et al.

<120> Staphylococcus areus genes and polypeptides

<130> PB484

<140> US 09/512,255
<141> 2000-02-24

<150> US 60/098,964
<151> 1998-09-01

<150> US 60/009,861
<151> 1996-01-05

<150> PCT/ US99/19726
<151> 1999-08-31

<150> US 08/956,171
<151> 1997-10-20

<160> 61

<170> PatentIn version 3.0

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ttttggtgca tatgcgccag aaaagattat tgacaatgcc tattttgagc aatttttaga 180

tacatctgat gaatggattt ctaagatgac tggaattaaa gaaagacatt gggcagatga 240

tgatcaagat acttcagatt tagcatatga agcaagttta aaagcaatcg ctgacgctgg 300

tattcagccc gaagatatag atatgataat tgttgccaca gcaactggag atatgccatt 360

tccaactgtc gcaaatatgt tgcaagaacg tttagggacg ggcaaagttg cctctatgga 420

tcaacttgca gcatgttctg gatttatgta ttcaatgatt acagctaaac aatatgttca 480

atctggagat tatcataaca ttttagttgt cggtgcagat aaattatcta aaataacaga 540

tttaactgac cgttctactg cagttctatt tggagatggt gcaggtgcgg ttatcatcgg 600

tgaagtttca gatggcagag gtattataag ttatgaaatg ggttctgatg gcacaggtgg 660

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taaatttgct gttagaatta tgggtgatgc atcaacacgt gtagttgaaa aagcgaattt 780

aacatcagat gatatagatt tatttattcc tcatcaagct aatattagaa ttatggaatc 840

agctagagaa cgcttaggta tttcaaaaga caaaatgagt gtttctgtaa ataaatatgg 900

aaatacttca gctgcgtcaa tacctttaag tatcgatcaa gaattaaaaa atggtaaaat 960

caaagatgat gatacaattg ttcttgtcgg attcggtggc ggcctaactt ggggcgcaat 1020

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20 25 30

Ile Ser Lys Met Thr Gly Ile Lys Glu Arg His Trp Ala Asp Asp Asp
35 40 45

Gln Asp Thr Ser Asp Leu Ala Tyr Glu Ala Ser Leu Lys Ala Ile Ala
50 55 60

Asp Ala Gly Ile Gln Pro Glu Asp Ile Asp Met Ile Ile Val Ala Thr
65 70 75 80

Ala Thr Gly Asp Met Pro Phe Pro Thr Val Ala Asn Met Leu Gln Glu
85 90 95

Arg Leu Gly Thr Gly Lys Val Ala Ser Met Asp Gln Leu Ala Ala Cys
100 105 110

Ser Gly Phe Met Tyr Ser Met Ile Thr Ala Lys Gln Tyr Val Gln Ser
115 120 125

Gly Asp Tyr His Asn Ile Leu Val Val Gly Ala Asp Lys Leu Ser Lys
130 135 140

Ile Thr Asp Leu Thr Asp Arg Ser Thr Ala Val Leu Phe Gly Asp Gly
145 150 155 160

Ala Gly Ala Val Ile Ile Gly Glu Val Ser Asp Gly Arg Gly Ile Ile
165 170 175

Ser Tyr Glu Met Gly Ser Asp Gly Thr Gly Gly Lys His Leu Tyr Leu
180 185 190

Asp Lys Asp Thr Gly Lys Leu Lys Met Asn Gly Arg Glu Val Phe Lys
195 200 205

Phe Ala Val Arg Ile Met Gly Asp Ala Ser Thr Arg Val Val Glu Lys
210 215 220

Ala Asn Leu Thr Ser Asp Asp Ile Asp Leu Phe Ile Pro His Gln Ala
225 230 235 240

Asn Ile Arg Ile Met Glu Ser Ala Arg Glu Arg Leu Gly Ile Ser Lys
245 250 255

Asp Lys Met Ser Val Ser Val Asn Lys Tyr Gly Asn Thr Ser Ala Ala
260 265 270

Ser Ile Pro Leu Ser Ile Asp Gln Glu Leu Lys Asn Gly Lys Ile Lys
275 280 285

Asp Asp Asp Thr Ile Val Leu Val Gly Phe Gly Gly Gly Leu Thr Trp
290 295 300

Gly Ala Met Thr Ile Lys Trp Gly Lys
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tcaagcttta caacaactta tcccaaatga aaaaattaaa gttgatgaac ctttaaaacg 180

atacacttat actaaaacag gtggtaatgc cgacttttac attaccccta ctaaaaatga 240

agaagtacaa gcagttgtta aatatgccta tcaaaatgag attcctgtta catatttagg 300

aaatggctca aatattatta tccgtgaagg tggtattcgc ggtattgtaa ttagtttatt 360

atcactagat catatcgaag tatctgatga tgcgataata gccggtagcg gcgctgcaat 420

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aacaaaagaa ttagagttag attatcgtaa tagcattatt caaaaagaac acttagttgt 660

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tcaccgtatt ggcggcgttg aagtttcaac caaacacgct ggttttatgg taaatgtaga 900

caatggaact gctacagatt atgaaaacct tattcattat gtacaaaaga ccgtcaaaga 960

aaaatttggc attgaattaa atcgtgaagt tcgcattatt ggtgaacatc caaaggaatc 1020

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<212> PRT
<213> Staphylococcus aureus

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Glu Lys Ile Lys Val Asp Glu Pro Leu Lys Arg Tyr Thr Tyr Thr Lys
20 25 30

Thr Gly Gly Asn Ala Asp Phe Tyr Ile Thr Pro Thr Lys Asn Glu Glu
35 40 45

Val Gln Ala Val Val Lys Tyr Ala Tyr Gln Asn Glu Ile Pro Val Thr
50 55 60

Tyr Leu Gly Asn Gly Ser Asn Ile Ile Ile Arg Glu Gly Gly Ile Arg
65 70 75 80

Gly Ile Val Ile Ser Leu Leu Ser Leu Asp His Ile Glu Val Ser Asp
85 90 95

Asp Ala Ile Ile Ala Gly Ser Gly Ala Ala Ile Ile Asp Val Ser Arg
100 105 110

Val Ala Arg Asp Tyr Ala Leu Thr Gly Leu Glu Phe Ala Cys Gly Ile
115 120 125

Pro Gly Ser Ile Gly Gly Ala Val Tyr Met Asn Ala Gly Ala Tyr Gly
130 135 140

Gly Glu Val Lys Asp Cys Ile Asp Tyr Ala Leu Cys Val Asn Glu Gln
145 150 155 160

Gly Ser Leu Ile Lys Leu Thr Thr Lys Glu Leu Glu Leu Asp Tyr Arg
165 170 175

Asn Ser Ile Ile Gln Lys Glu His Leu Val Val Leu Glu Ala Ala Phe
180 185 190

Thr Leu Ala Pro Gly Lys Met Thr Glu Ile Gln Ala Lys Met Asp Asp
195 200 205

Leu Thr Glu Arg Arg Glu Ser Lys Gln Pro Leu Glu Tyr Pro Ser Cys
210 215 220

Gly Ser Val Phe Gln Arg Pro Pro Gly His Phe Ala Gly Lys Leu Ile
225 230 235 240

Gln Asp Ser Asn Leu Gln Gly His Arg Ile Gly Gly Val Glu Val Ser
245 250 255

Thr Lys His Ala Gly Phe Met Val Asn Val Asp Asn Gly Thr Ala Thr
260 265 270

Asp Tyr Glu Asn Leu Ile His Tyr Val Gln Lys Thr Val Lys Glu Lys
275 280 285

Phe Gly Ile Glu Leu Asn Arg Glu Val Arg Ile Ile Gly Glu His Pro
290 295 300

Lys Glu Ser
305

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atgtcatcat gggaatcgct aataagcgta gtattgcttt tggtgtcgct aaagttttag 180

atcaattagg tgctaaatta gtatttactt accgtaaaga acgtagccgt aaagagcttg 240

aaaaattatt agaacaatta aatcaaccag aagcgcactt atatcaaatt gatgttcaaa 300

gcgatgaaga ggttattaat ggttttgagc aaattggtaa agatgttggc aatattgatg 360

gtgtatatca ttcaatcgca tttgctaata tggaagactt acgcggacgc ttttctgaaa 420

cttcacgtga aggcttcttg ttagctcaag acattagttc ttactcatta acaattgtgg 480

ctcatgaagc taaaaaatta atgccagaag gtggtagcat tgttgcaaca acatatttag 540

gtggcgaatt cgcagttcaa aactataatg tgatgggtgt tgctaaagcg agcttagaag 600

caaatgttaa atatttagca ttagacttag gtccagataa tattcgcgtt aatgcaattt 660

cagctagtcc aatccgtaca ttaagtgcaa aaggtgtggg tggtttcaat acaattctta 720

aagaaatcga agagcgtgca cctttaaaac gtaatgttga tcaagtagaa gtaggtaaaa 780

ctgcggctta cttattaagt gatttatcaa gtggcgttac aggtgaaaat attcatgtag 840

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<213> Staphylococcus aureus

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20 25 30

Ala Lys Leu Val Phe Thr Tyr Arg Lys Glu Arg Ser Arg Lys Glu Leu
35 40 45

Glu Lys Leu Leu Glu Gln Leu Asn Gln Pro Glu Ala His Leu Tyr Gln
50 55 60

Gly Lys Asp Val Gly Asn Ile Asp Gly Val Tyr His Ser Ile Ala Phe
65 70 75 80

Ile Asp Val Gln Ser Asp Glu Glu Val Ile Asn Gly Phe Glu Gln Ile
85 90 95

Ala Asn Met Glu Asp Leu Arg Gly Arg Phe Ser Glu Thr Ser Arg Glu
100 105 110

Gly Phe Leu Leu Ala Gln Asp Ile Ser Ser Tyr Ser Leu Thr Ile Val
115 120 125

Ala His Glu Ala Lys Lys Leu Met Pro Glu Gly Gly Ser Ile Val Ala
130 135 140

Thr Thr Tyr Leu Gly Gly Glu Phe Ala Val Gln Asn Tyr Asn Val Met
145 150 155 160

Gly Val Ala Lys Ala Ser Leu Glu Ala Asn Val Lys Tyr Leu Ala Leu
165 170 175

Asp Leu Gly Pro Asp Asn Ile Arg Val Asn Ala Ile Ser Ala Ser Pro
180 185 190

Ile Arg Thr Leu Ser Ala Lys Gly Val Gly Gly Phe Asn Thr Ile Leu
195 200 205

Lys Glu Ile Glu Glu Arg Ala Pro Leu Lys Arg Asn Val Asp Gln Val
210 215 220

Glu Val Gly Lys Thr Ala Ala Tyr Leu Leu Ser Asp Leu Ser Ser Gly
225 230 235 240

Val Thr Gly Glu Asn Ile His Val Asp Ser Gly Phe His Ala Ile Lys
245 250 255

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aaattagtta atgttccagc tttaagtgat gtagaaacaa taaataatgt attaacaact 240

ttaaatgctg acgttacata caaaaaggac gaaaatgctg ttgtcgttga tgcaacaaag 300

actctaaatg aagaggcacc atatgaatat gttagtaaaa tgcgtgcaag tattttagtt 360

atgggacctc ttttagcaag actaggacat gctattgttg cattgcctgg tggttgtgca 420

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catcttgaaa atggtaatat ttatgctaat gctaaagatg gattaaaagg tacatcaatt 540

catttagatt ttccaagtgt aggagcaaca caaaatatta ttatggcagc atcattagct 600

aagggtaaga ctttaattga aaatgcagct aaagaacctg aaattgtcga tttagcaaac 660

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<212> PRT

<213> Staphylococcus aureus

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Leu Leu Ala Ser Asp Lys Pro Ser Lys Leu Val Asn Val Pro Ala Leu
        35                  40                  45

Ser Asp Val Glu Thr Ile Asn Asn Val Leu Thr Thr Leu Asn Ala Asp
    50                  55                  60

Val Thr Tyr Lys Lys Asp Glu Asn Ala Val Val Val Asp Ala Thr Lys
65                  70                  75                  80

Thr Leu Asn Glu Glu Ala Pro Tyr Glu Tyr Val Ser Lys Met Arg Ala
                85                  90                  95

Ser Ile Leu Val Met Gly Pro Leu Leu Ala Arg Leu Gly His Ala Ile
            100                 105                 110

Val Ala Leu Pro Gly Gly Cys Ala Ile Gly Ser Arg Pro Ile Glu Gln
        115                 120                 125

His Ile Lys Gly Phe Glu Ala Leu Gly Ala Glu Ile His Leu Glu Asn
    130                 135                 140

Gly Asn Ile Tyr Ala Asn Ala Lys Asp Gly Leu Lys Gly Thr Ser Ile
145                 150                 155                 160

His Leu Asp Phe Pro Ser Val Gly Ala Thr Gln Asn Ile Ile Met Ala
                165                 170                 175

Ala Ser Leu Ala Lys Gly Lys Thr Leu Ile Glu Asn Ala Ala Lys Glu
            180                 185                 190

Pro Glu Ile Val Asp Leu Ala Asn Tyr Ile Asn Glu Met Gly Gly Arg
        195                 200                 205

Ile Thr Gly Ala Gly Thr Asp Thr Ile Thr Ile Asn Gly Val Glu Ser
    210                 215                 220

Leu His Gly Val Glu His Ala Ile Ile Pro Asp Arg Ile Glu Ala Gly
225                 230                 235                 240

Thr Leu Leu Ile Ala Gly Ala Ile Thr Arg Gly Asp Ile Phe Val Arg
                245                 250                 255

Gly Ala Ile Lys Glu His Met Ala Ser Leu Val Tyr Lys Leu Glu Glu
            260                 265                 270

Met Gly Val Glu Leu Asp Tyr Gln Glu Asp Gly Ile Arg Val Arg Ala
        275                 280                 285
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Glu Gly Glu Leu Gln Pro Val Asp Ile Lys Thr Leu Pro His Pro Gly
290 295 300

Phe Pro Thr Asp Met Gln Ser Gln Met Met Ala Leu Leu Leu Thr Ala
305 310 315 320

Asn Gly His Lys Val Val Thr Glu Thr Val Phe Glu Asn Arg Phe Met
325 330 335

His Val Ala Glu Phe Lys Arg Met Asn Ala Asn Ile Asn Val Glu Gly
340 345 350

Arg Ser Ala Lys Leu Glu Gly Lys Ser Gln Leu Gln Gly Ala Gln Val
355 360 365

Lys Ala Thr Asp Leu Arg Ala Ala Ala Ala Leu Ile Leu Ala Gly Leu
370 375 380

Val Ala Asp Gly Lys Thr Ser Val Thr Glu Leu Thr His Leu Asp Arg
385 390 395 400

Gly Tyr Val Asp Leu His Gly Lys Leu Lys Gln Leu Gly Ala Asp Ile
405 410 415

Glu Arg Ile Asn Asp
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atgcctgaaa gagaacgtac atctcctcag tatgaatcat tccacgaatt gtacaagaac 180

tatactacca aggaactcac tcaaaaagct aaaactctta agttgacgaa ccatagtaaa 240

ttaaataaaa aagaacttgt tctagctatt atggaagcac aaatggaaaa agatggtaac 300

tattatatgg aaggtatctt agatgatata caaccaggtg gttatggttt tttaagaaca 360

gtgaactatt ctaaagggga aaaagatatt tatatatctg ctagccaaat tcgtcgtttt 420

gaaattaaac gtggggataa agtaactggg aaagttagaa aacctaaaga taacgaaaaa 480

tattatggct tattacaagt tgactttgtc aatgaccata acgcagaaga agtgaagaaa 540

cgtccgcatt tccaagcttt gacaccactt tatccagatg agcgtattaa attagagaca 600

gaaatacaaa attattcaac gcgcatcatg gatttagtaa caccgattgg tttaggtcaa 660

cgtggtttaa tagtggcgcc acctaaagca ggtaaaacat cgttattaaa agaaatagcg 720

aatgcaatca gtacgaacaa accagatgca aagctattta ttttgttagt tggcgagcgt 780

cctgaagagg taacagattt agaacgctca gtagaagctg ctgaagtcgt tcattcaacg 840

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agtttaacaa tacttgcaac tgcattagtt gatacgggtt cacgtatgga cgatatgatt 1140

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aagcagctac aaaagtctgc agaagaaagt actaaaacgg gtcgacctat aatttaataa 1440

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aaaactcaca aataactctg ttccagatgg ttcaggg 1537

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<213> Staphylococcus aureus

<400> 10

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Leu Lys Leu Thr Asn His Ser Lys Leu Asn Lys Lys Glu Leu Val Leu
35 40 45

Ala Ile Met Glu Ala Gln Met Glu Lys Asp Gly Asn Tyr Tyr Met Glu
50 55 60

Gly Ile Leu Asp Asp Ile Gln Pro Gly Gly Tyr Gly Phe Leu Arg Thr
65 70 75 80

Val Asn Tyr Ser Lys Gly Glu Lys Asp Ile Tyr Ile Ser Ala Ser Gln
85 90 95

Ile Arg Arg Phe Glu Ile Lys Arg Gly Asp Lys Val Thr Gly Lys Val
100 105 110

Arg Lys Pro Lys Asp Asn Glu Lys Tyr Tyr Gly Leu Leu Gln Val Asp
115 120 125

Phe Val Asn Asp His Asn Ala Glu Glu Val Lys Lys Arg Pro His Phe
130 135 140

Gln Ala Leu Thr Pro Leu Tyr Pro Asp Glu Arg Ile Lys Leu Glu Thr
145 150 155 160

Glu Ile Gln Asn Tyr Ser Thr Arg Ile Met Asp Leu Val Thr Pro Ile
165 170 175

Gly Leu Gly Gln Arg Gly Leu Ile Val Ala Pro Pro Lys Ala Gly Lys
180 185 190

Thr Ser Leu Leu Lys Glu Ile Ala Asn Ala Ile Ser Thr Asn Lys Pro
195 200 205

Asp Ala Lys Leu Phe Ile Leu Leu Val Gly Glu Arg Pro Glu Glu Val
210 215 220

Thr Asp Leu Glu Arg Ser Val Glu Ala Ala Glu Val Val His Ser Thr
225 230 235 240

Phe Asp Glu Pro Pro Glu His His Val Lys Val Ala Glu Leu Leu Leu
245 250 255

Glu Arg Ala Lys Arg Leu Val Glu Ile Gly Glu Asp Val Ile Ile Leu
260 265 270

Met Asp Ser Ile Thr Arg Leu Ala Arg Ala Tyr Asn Leu Val Ile Pro
275 280 285

Pro Ser Gly Arg Thr Leu Ser Gly Gly Leu Asp Pro Ala Ser Leu His
290 295 300

Lys Pro Lys Ala Phe Phe Gly Ala Ala Arg Asn Ile Glu Ala Gly Gly
305 310 315 320

Ser Leu Thr Ile Leu Ala Thr Ala Leu Val Asp Thr Gly Ser Arg Met
325 330 335

Asp Asp Met Ile Tyr Glu Glu Phe Lys Gly Thr Gly Asn Met Glu Leu
340 345 350

His Leu Asp Arg Lys Leu Ser Glu Arg Arg Ile Phe Pro Ala Ile Asp
355 360 365

Ile Gly Arg Ser Ser Thr Arg Lys Glu Glu Leu Leu Ile Ser Lys Ser
370 375 380

Glu Leu Asp Thr Leu Trp Gln Leu Arg Asn Leu Phe Thr Asp Ser Thr
385 390 395 400

Asp Phe Thr Glu Arg Phe Ile Arg Lys Leu Lys Arg Ser Lys Asn Asn
405 410 415

Glu Asp Phe Phe Lys Gln Leu Gln Lys Ser Ala Glu Glu Ser Thr Lys
420 425 430

Thr Gly Arg Pro Ile Ile
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<211> 554
<212> DNA
<213> Staphylococcus aureus

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ccgaattaaa aagaatgcag attttcagag aatatataaa aaaggtcatt ctgtagccaa 180

cagacaattt gttgtataca cttgtaataa taaagaaata gaccattttc gcttaggtat 240

tagtgtttct aaaaaactag gtaatgcagt gttaagaaac aagattaaaa gagcaatacg 300

tgaaaatttc aaagtacata agtcgcatat attggccaaa gatattattg taatagcaag 360

acagccagct aaagatatga cgactttaca aatacagaat agtcttgagc acgtacttaa 420

aattgccaaa gtttttaata aaaagattaa gtaaggatag ggtaggggaa ggaaaacatt 480

aaccactcaa cacatcccga agtcttacct cagacaaacg taagactgac cttagggtta 540

taataactta cttt 554

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<212> PRT
<213> Staphylococcus aureus

<400> 12

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Tyr Thr Cys Asn Asn Lys Glu Ile Asp His Phe Arg Leu Gly Ile Ser
35 40 45

Val Ser Lys Lys Leu Gly Asn Ala Val Leu Arg Asn Lys Ile Lys Arg
50 55 60

Ala Ile Arg Glu Asn Phe Lys Val His Lys Ser His Ile Leu Ala Lys
65 70 75 80

Asp Ile Ile Val Ile Ala Arg Gln Pro Ala Lys Asp Met Thr Thr Leu

85 90 95

Gln Ile Gln Asn Ser Leu Glu His Val Leu Lys Ile Ala Lys Val Phe
100 105 110

Asn Lys Lys Ile Lys
115

<210> 13
<211> 1712
<212> DNA
<213> Staphylococcus aureus

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gaattcattc cctaggatat acgaatgtac ctgttaaatt agataaagaa gttgaaggta 180

caattcgcgt acacacagtt gaacaataaa gttggattga aataagaggt gtaaccattc 240

atggatagaa tgtatgagca aaatcaaatg ccgcataaca atgaagctga acagtctgtc 300

ttaggttcaa ttattataga tccagaattg attaatacta ctcaggaagt tttgcttcct 360

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actgcagata gtattgccaa tgatggatat aatgatgaac ttgaactaga tgcgatttta 660

agtgatgcag aacgtcgaat tttagagcta tcatcttctc gtgaaagcga tggctttaaa 720

gacattcgag acgtcttagg acaagtgtat gaaacagctg aagagcttga tcaaaatagt 780

ggtcaaacac caggtatacc tacaggatat cgagatttag accaaatgac agcagggttc 840

aaccgaaatg atttaattat ccttgcagcg cgtccatctg taggtaagac tgcgttcgca 900

cttaatattg cacaaaaagt tgcaacgcat gaagatatgt atacagttgg tattttctcg 960

ctagagatgg gtgctgatca gttagccaca cgtatgattt gtagttctgg aaatgttgac 1020

tcaaaccgct taagaacggg tactatgact gaggaagatt ggagtcgttt tactatagcg 1080

gtaggtaaat tatcacgtac gaagattttt attgatgata caccgggtat tcgaattaat 1140

gatttacgtt ctaaatgtcg tcgattaaag caagaacatg gcttagacat gattgtgatt 1200

gactacttac agttgattca aggtagtggt tcacgtgcgt ccgataacag acaacaggaa 1260

gtttctgaaa tctctcgtac attaaaagca ttagcccgtg aattaaaatg tccagttatc 1320

gcattaagtc agttatctcg tggtgttgaa caacgacaag ataaacgtcc aatgatgagt 1380

gatattcgtg aatctggttc gattgagcaa gatgccgata tcgttgcatt cttataccgt 1440

gatgattact ataaccgtgg cggcgatgaa gatgatgacg atgatggtgg tttcgagcca 1500

caaacgaatg atgaaaacgg tgaaattgaa attatcattg ctaagcaacg taacggtcca 1560

acaggcacag ttaagttaca ttttatgaaa caatataata aatttaccga tatcgattat 1620

gcacatgcag atatgatgta aaaaagtttt tccgtacaat aatcattaag atgataaaat 1680

tgtacggttt ttattttgtt ctgaacgggt tg 1712

<210> 14
<211> 466
<212> PRT
<213> Staphylococcus aureus

<400> 14

Met Asp Arg Met Tyr Glu Gln Asn Gln Met Pro His Asn Asn Glu Ala
1 5 10 15

Glu Gln Ser Val Leu Gly Ser Ile Ile Ile Asp Pro Glu Leu Ile Asn
20 25 30

Thr Thr Gln Glu Val Leu Leu Pro Glu Ser Phe Tyr Arg Gly Ala His
35 40 45

Gln His Ile Phe Arg Ala Met Met His Leu Asn Glu Asp Asn Lys Glu
50 55 60

Ile Asp Val Val Thr Leu Met Asp Gln Leu Ser Thr Glu Gly Thr Leu
65 70 75 80

Asn Glu Ala Gly Gly Pro Gln Tyr Leu Ala Glu Leu Ser Thr Asn Val
85 90 95

Pro Thr Thr Arg Asn Val Gln Tyr Tyr Thr Asp Ile Val Ser Lys His
100 105 110

Ala Leu Lys Arg Arg Leu Ile Gln Thr Ala Asp Ser Ile Ala Asn Asp
115 120 125

Gly Tyr Asn Asp Glu Leu Glu Leu Asp Ala Ile Leu Ser Asp Ala Glu
130 135 140

Arg Arg Ile Leu Glu Leu Ser Ser Ser Arg Glu Ser Asp Gly Phe Lys
145 150 155 160

Asp Ile Arg Asp Val Leu Gly Gln Val Tyr Glu Thr Ala Glu Glu Leu
165 170 175

Asp Gln Asn Ser Gly Gln Thr Pro Gly Ile Pro Thr Gly Tyr Arg Asp

180 185 190

Leu Asp Gln Met Thr Ala Gly Phe Asn Arg Asn Asp Leu Ile Ile Leu
195 200 205

Ala Ala Arg Pro Ser Val Gly Lys Thr Ala Phe Ala Leu Asn Ile Ala
210 215 220

Gln Lys Val Ala Thr His Glu Asp Met Tyr Thr Val Gly Ile Phe Ser
225 230 235 240

Leu Glu Met Gly Ala Asp Gln Leu Ala Thr Arg Met Ile Cys Ser Ser
245 250 255

Gly Asn Val Asp Ser Asn Arg Leu Arg Thr Gly Thr Met Thr Glu Glu
260 265 270

Asp Trp Ser Arg Phe Thr Ile Ala Val Gly Lys Leu Ser Arg Thr Lys
275 280 285

Ile Phe Ile Asp Asp Thr Pro Gly Ile Arg Ile Asn Asp Leu Arg Ser
290 295 300

Lys Cys Arg Arg Leu Lys Gln Glu His Gly Leu Asp Met Ile Val Ile
305 310 315 320

Asp Tyr Leu Gln Leu Ile Gln Gly Ser Gly Ser Arg Ala Ser Asp Asn
325 330 335

Arg Gln Gln Glu Val Ser Glu Ile Ser Arg Thr Leu Lys Ala Leu Ala
340 345 350

Arg Glu Leu Lys Cys Pro Val Ile Ala Leu Ser Gln Leu Ser Arg Gly
355 360 365

Val Glu Gln Arg Gln Asp Lys Arg Pro Met Met Ser Asp Ile Arg Glu
370 375 380

Ser Gly Ser Ile Glu Gln Asp Ala Asp Ile Val Ala Phe Leu Tyr Arg
385 390 395 400

Asp Asp Tyr Tyr Asn Arg Gly Gly Asp Glu Asp Asp Asp Asp Asp Gly
405 410 415

Gly Phe Glu Pro Gln Thr Asn Asp Glu Asn Gly Glu Ile Glu Ile Ile
420 425 430

Ile Ala Lys Gln Arg Asn Gly Pro Thr Gly Thr Val Lys Leu His Phe
435 440 445

Met Lys Gln Tyr Asn Lys Phe Thr Asp Ile Asp Tyr Ala His Ala Asp
450 455 460

Met Met
465

<210> 15

<211> 1170
<212> DNA
<213> Staphylococcus aureus

<400> 15
gtggttccgt attattagga ttggaaggta ctgtagttaa agcacacggt agttcaaatg 60

ctaaagcttt ttattctgca attagacaag cgaaaatcgc aggagaacaa aatattgtac 120

aaacaatgaa agagactgta ggtgaatcaa atgagtaaaa cagcaattat ttttccggga 180

caaggtgccc aaaaagttgg tatggcgcaa gatttgttta acaacaatga tcaagcaact 240

gaaattttaa cttcagcagc gaacacatta gactttgata ttttagagac aatgtttact 300

gatgaagaag gtaaattggg tgaaactgaa aacacacaac cagctttatt gacgcatagt 360

tcggcattat tagcagcgct aaaaaatttg aatcctgatt ttactatggg gcatagttta 420

ggtgaatatt caagtttagt tgcagctgac gtattatcat ttgaagatgc agttaaaatt 480

gttagaaaac gtggtcaatt aatggcgcaa gcatttccta ctggtgtagg aagcatggct 540

gcagtattgg gattagattt tgataaagtc gatgaaattt gtaagtcatt atcatctgat 600

gacaaaataa ttgaaccagc aaacattaat tgcccaggtc aaattgttgt ttcaggtcac 660

aaagctttaa ttgatgagct agtagaaaaa ggtaaatcat taggtgcaaa acgtgtcatg 720

cctttagcag tatctggacc attccattca tcgctaatga aagtgattga agaagatttt 780

tcaagttaca ttaatcaatt tgaatggcgt gatgctaagt ttcctgtagt tcaaaatgta 840

aatgcgcaag gtgaaactga caaagaagta attaaatcta atatggtcaa gcaattatat 900

tcaccagtac aattcattaa ctcaacagaa tggctaatag accaaggtgt tgatcatttt 960

attgaaattg gtcctggaaa agttttatct ggcttaatta aaaaaataaa tagagatgtt 1020

aagttaacat caattcaaac tttagaagat gtgaaaggat ggaatgaaaa tgactaagag 1080

tgctttagta acaggtgcat caagaggaat tggacgtagt attgcgttac aattagcaga 1140

agaaggatat aatgtagcag taaactatgc 1170

<210> 16
<211> 308
<212> PRT
<213> Staphylococcus aureus

<400> 16

Met Ser Lys Thr Ala Ile Ile Phe Pro Gly Gln Gly Ala Gln Lys Val
1 5 10 15

Gly Met Ala Gln Asp Leu Phe Asn Asn Asn Asp Gln Ala Thr Glu Ile

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            20                  25                  30

Leu Thr Ser Ala Ala Asn Thr Leu Asp Phe Asp Ile Leu Glu Thr Met
        35                  40                  45

Phe Thr Asp Glu Glu Gly Lys Leu Gly Glu Thr Glu Asn Thr Gln Pro
    50                  55                  60

Ala Leu Leu Thr His Ser Ser Ala Leu Leu Ala Ala Leu Lys Asn Leu
65                  70                  75                  80

Asn Pro Asp Phe Thr Met Gly His Ser Leu Gly Glu Tyr Ser Ser Leu
                85                  90                  95

Val Ala Ala Asp Val Leu Ser Phe Glu Asp Ala Val Lys Ile Val Arg
            100                 105                 110

Lys Arg Gly Gln Leu Met Ala Gln Ala Phe Pro Thr Gly Val Gly Ser
        115                 120                 125

Met Ala Ala Val Leu Gly Leu Asp Phe Asp Lys Val Asp Glu Ile Cys
    130                 135                 140

Lys Ser Leu Ser Ser Asp Asp Lys Ile Ile Glu Pro Ala Asn Ile Asn
145                 150                 155                 160

Cys Pro Gly Gln Ile Val Val Ser Gly His Lys Ala Leu Ile Asp Glu
                165                 170                 175

Leu Val Glu Lys Gly Lys Ser Leu Gly Ala Lys Arg Val Met Pro Leu
            180                 185                 190

Ala Val Ser Gly Pro Phe His Ser Ser Leu Met Lys Val Ile Glu Glu
        195                 200                 205

Asp Phe Ser Ser Tyr Ile Asn Gln Phe Glu Trp Arg Asp Ala Lys Phe
    210                 215                 220

Pro Val Val Gln Asn Val Asn Ala Gln Gly Glu Thr Asp Lys Glu Val
225                 230                 235                 240

Ile Lys Ser Asn Met Val Lys Gln Leu Tyr Ser Pro Val Gln Phe Ile
                245                 250                 255

Asn Ser Thr Glu Trp Leu Ile Asp Gln Gly Val Asp His Phe Ile Glu
            260                 265                 270

Ile Gly Pro Gly Lys Val Leu Ser Gly Leu Ile Lys Lys Ile Asn Arg
        275                 280                 285

Asp Val Lys Leu Thr Ser Ile Gln Thr Leu Glu Asp Val Lys Gly Trp
    290                 295                 300

Asn Glu Asn Asp
305
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<210> 17

<211> 1080
<212> DNA
<213> Staphylococcus aureus

<400> 17
aaatacacat ttaatctgca gtatttcaat gcattgacgc tatttttttg atataattac 60

tttgaaaaat acgtgcgtaa gcactcaagg aggaactttc atgcctttag tttcaatgaa 120

agaaatgtta attgatgcaa aagaaaatgg ttatgcggta ggtcaataca atattaataa 180

cctagaattc actcaagcaa ttttagaagc gtcacaagaa gaaaatgcac ctgtaatttt 240

aggtgtttct gaaggtgctg ctcgttacat gagcggtttc tacacaattg ttaaaatggt 300

tgaagggtta atgcatgact taaacatcac tattcctgta gcaatccatt tagaccatgg 360

ttcaagcttt gaaaaatgta aagaagctat cgatgctggt ttcacatcag taatgatcga 420

tgcttcacac agcccattcg aagaaaacgt agcaacaact aaaaaagttg ttgaatacgc 480

tcatgaaaaa ggtgtttctg tagaagctga attaggtact gttggtggac aagaagatga 540

tgttgtagca gacggcatca tttatgctga tcctaaagaa tgtcaagaac tagttgaaaa 600

aactggtatt gatgcattag cgccagcatt aggttcagtt catggtccat acaaaggtga 660

accaaaatta ggatttaaag aaatggaaga aatcggttta tctacaggtt taccattagt 720

attacacggt ggtactggta tcccgactaa agatatccaa aaagcaattc catttggtac 780

agctaaaatt aacgtaaaca ctgaaaacca aatcgcttca gcaaaagcag ttcgtgacgt 840

tttaaataac gacaaagaag tttacgatcc tcgtaaatac ttaggacctg cacgtgaagc 900

catcaaagaa acagttaaag gtaaaattaa agagttcggt acttctaacc gcgctaaata 960

attaatattt agtctttaag ttattaataa cgtagggata ttaattttaa aagaagcaga 1020

caaaatggtg tttgcttctt ttttatgtcg tataagtaat aaataaaaca gtttgatttt 1080

<210> 18
<211> 286
<212> PRT
<213> Staphylococcus aureus

<400> 18

Met Pro Leu Val Ser Met Lys Glu Met Leu Ile Asp Ala Lys Glu Asn
1 5 10 15

Gly Tyr Ala Val Gly Gln Tyr Asn Ile Asn Asn Leu Glu Phe Thr Gln
20 25 30

Ala Ile Leu Glu Ala Ser Gln Glu Glu Asn Ala Pro Val Ile Leu Gly
35 40 45

Val Ser Glu Gly Ala Ala Arg Tyr Met Ser Gly Phe Tyr Thr Ile Val
50 55 60

Lys Met Val Glu Gly Leu Met His Asp Leu Asn Ile Thr Ile Pro Val
65 70 75 80

Ala Ile His Leu Asp His Gly Ser Ser Phe Glu Lys Cys Lys Glu Ala
85 90 95

Ile Asp Ala Gly Phe Thr Ser Val Met Ile Asp Ala Ser His Ser Pro
100 105 110

Phe Glu Glu Asn Val Ala Thr Thr Lys Lys Val Val Glu Tyr Ala His
115 120 125

Glu Lys Gly Val Ser Val Glu Ala Glu Leu Gly Thr Val Gly Gly Gln
130 135 140

Glu Asp Asp Val Val Ala Asp Gly Ile Ile Tyr Ala Asp Pro Lys Glu
145 150 155 160

Cys Gln Glu Leu Val Glu Lys Thr Gly Ile Asp Ala Leu Ala Pro Ala
165 170 175

Leu Gly Ser Val His Gly Pro Tyr Lys Gly Glu Pro Lys Leu Gly Phe
180 185 190

Lys Glu Met Glu Glu Ile Gly Leu Ser Thr Gly Leu Pro Leu Val Leu
195 200 205

His Gly Gly Thr Gly Ile Pro Thr Lys Asp Ile Gln Lys Ala Ile Pro
210 215 220

Phe Gly Thr Ala Lys Ile Asn Val Asn Thr Glu Asn Gln Ile Ala Ser
225 230 235 240

Ala Lys Ala Val Arg Asp Val Leu Asn Asn Asp Lys Glu Val Tyr Asp
245 250 255

Pro Arg Lys Tyr Leu Gly Pro Ala Arg Glu Ala Ile Lys Glu Thr Val
260 265 270

Lys Gly Lys Ile Lys Glu Phe Gly Thr Ser Asn Arg Ala Lys
275 280 285

<210> 19
<211> 1340
<212> DNA
<213> Staphylococcus aureus

<400> 19
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cgtcggaggt acgacatgat taaaaataca attaaaaaat tgatagaaca tagtatatat 120

acgactttta aattactatc aaaattgcca aacaagaatc taatttattt tgaaagcttt 180

catggtaaac aatacagcga caaccccaaa gcattatatg aatacttaac tgaacatagc 240

gatgcccaat taatatgggg tgtgaaaaaa ggatatgaac acatattcca acagcacaat 300

gtaccatatg ttacaaagtt ttcaatgaaa tggtttttag cgatgccaag agcgaaagcg 360

tggatgatta acacacgtac accagattgg ttatataaat caccgcgaac gacgtactta 420

caaacatggc atggcacgcc attaaaaaag attggtttgg atattagtaa cgttaaaatg 480

ctaggaacaa atactcaaaa ttaccaagat ggctttaaaa aagaaagcca acggtgggat 540

tatctagtgt cacctaatcc atattcgaca tcgatatttc aaaatgcatt tcatgttagt 600

cgagataaga ttttggaaac aggttatcca agaaatgata aattatcaca taaacgcaat 660

gatactgaat atattaatgg tattaagaca agattaaata ttccattaga taaaaaagtg 720

attatgtacg cgccaacttg gcgtgacgat gaagcgattc gagaaggttc atatcaattt 780

aatgttaact ttgatataga agctttgcgt caagcgctgg atgatgatta tgttatttta 840

ttacgcatgc attatttagt tgtgacacgt attgatgaac atgatgattt tgtgaaagac 900

gtttcagatt atgaagacat ttcggattta tacttaatca gcgatgcgtt agttaccgac 960

tactcatctg tcatgttcga cttcggtgta ttaaagcgtc cgcaaatttt ctatgcatat 1020

gacttagata aatatggcga tgagcttaga ggtttttaca tggattataa aaaagagttg 1080

ccaggtccaa ttgttgaaaa tcaaacagca ctcattgatg cattaaaaca aatcgatgag 1140

actgcaaatg agtatattga agcacgaacg gtattttatc aaaaattctg ttcattagaa 1200

gatggacaag cgtcacaacg aatttgccaa acgattttta agtgataact taaaaacaat 1260

aaaaaattat aaattaatta gttaagtgat ataaataata aacgaaatgt ttgcttgtat 1320

gttattattt gtgtatgaaa 1340

<210> 20
<211> 389
<212> PRT
<213> Staphylococcus aureus

<400> 20

Met Ile Lys Asn Thr Ile Lys Lys Leu Ile Glu His Ser Ile Tyr Thr
1 5 10 15

Thr Phe Lys Leu Leu Ser Lys Leu Pro Asn Lys Asn Leu Ile Tyr Phe
20 25 30

Glu Ser Phe His Gly Lys Gln Tyr Ser Asp Asn Pro Lys Ala Leu Tyr
35 40 45

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Glu Tyr Leu Thr Glu His Ser Asp Ala Gln Leu Ile Trp Gly Val Lys
    50                  55                  60

Lys Gly Tyr Glu His Ile Phe Gln Gln His Asn Val Pro Tyr Val Thr
65                  70                  75                  80

Lys Phe Ser Met Lys Trp Phe Leu Ala Met Pro Arg Ala Lys Ala Trp
                85                  90                  95

Met Ile Asn Thr Arg Thr Pro Asp Trp Leu Tyr Lys Ser Pro Arg Thr
            100                 105                 110

Thr Tyr Leu Gln Thr Trp His Gly Thr Pro Leu Lys Lys Ile Gly Leu
        115                 120                 125

Asp Ile Ser Asn Val Lys Met Leu Gly Thr Asn Thr Gln Asn Tyr Gln
    130                 135                 140

Asp Gly Phe Lys Lys Glu Ser Gln Arg Trp Asp Tyr Leu Val Ser Pro
145                 150                 155                 160

Asn Pro Tyr Ser Thr Ser Ile Phe Gln Asn Ala Phe His Val Ser Arg
                165                 170                 175

Asp Lys Ile Leu Glu Thr Gly Tyr Pro Arg Asn Asp Lys Leu Ser His
            180                 185                 190

Lys Arg Asn Asp Thr Glu Tyr Ile Asn Gly Ile Lys Thr Arg Leu Asn
        195                 200                 205

Ile Pro Leu Asp Lys Lys Val Ile Met Tyr Ala Pro Thr Trp Arg Asp
    210                 215                 220

Asp Glu Ala Ile Arg Glu Gly Ser Tyr Gln Phe Asn Val Asn Phe Asp
225                 230                 235                 240

Ile Glu Ala Leu Arg Gln Ala Leu Asp Asp Asp Tyr Val Ile Leu Leu
                245                 250                 255

Arg Met His Tyr Leu Val Val Thr Arg Ile Asp Glu His Asp Asp Phe
            260                 265                 270

Val Lys Asp Val Ser Asp Tyr Glu Asp Ile Ser Asp Leu Tyr Leu Ile
        275                 280                 285

Ser Asp Ala Leu Val Thr Asp Tyr Ser Ser Val Met Phe Asp Phe Gly
    290                 295                 300

Val Leu Lys Arg Pro Gln Ile Phe Tyr Ala Tyr Asp Leu Asp Lys Tyr
305                 310                 315                 320

Gly Asp Glu Leu Arg Gly Phe Tyr Met Asp Tyr Lys Lys Glu Leu Pro
                325                 330                 335

Gly Pro Ile Val Glu Asn Gln Thr Ala Leu Ile Asp Ala Leu Lys Gln
            340                 345                 350
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Ile Asp Glu Thr Ala Asn Glu Tyr Ile Glu Ala Arg Thr Val Phe Tyr
355 360 365

Gln Lys Phe Cys Ser Leu Glu Asp Gly Gln Ala Ser Gln Arg Ile Cys
370 375 380

Gln Thr Ile Phe Lys
385

<210> 21
<211> 1430
<212> DNA
<213> Staphylococcus aureus

<400> 21
tgatttgtaa tcaaaactag atataattaa ataatgactt aaaataattt taaaataggg 60

aaatgtaaag taataggagt tctaagtgga ggatttacga tggataaaat agtaatcaaa 120

ggtggaaata aattaacggg tgaagttaaa gtagaaggtg ctaaaaatgc agtattacca 180

atattgacag catctttatt agcttctgat aaaccgagca aattagttaa tgttccagct 240

ttaagtgatg tagaaacaat aaataatgta ttaacaactt taaatgctga cgttacatac 300

aaaaaggacg aaaatgctgt tgtcgttgat gcaacaaaga ctctaaatga agaggcacca 360

tatgaatatg ttagtaaaat gcgtgcaagt attttagtta tgggacctct tttagcaaga 420

ctaggacatg ctattgttgc attgcctggt ggttgtgcaa ttggaagtag accgattgag 480

caacacatta aaggttttga agctttaggc gcagaaattc atcttgaaaa tggtaatatt 540

tatgctaatg ctaaagatgg attaaaaggt acatcaattc atttagattt tccaagtgta 600

ggagcaacac aaaatattat tatggcagca tcattagcta agggtaagac tttaattgaa 660

aatgcagcta aagaacctga aattgtcgat ttagcaaact acattaatga aatgggtggt 720

agaattactg gtgctggtac agacacaatt acaatcaatg gtgtagaatc attacatggt 780

gtagaacatg ctatcattcc agatagaatt gaagcaggca cattactaat cgctggtgct 840

ataacgcgtg gtgatatttt tgtacgtggt gcaatcaaag aacatatggc gagtttagtc 900

tataaactag aagaaatggg cgttgaattg gactatcaag aagatggtat tcgtgtacgt 960

gctgaagggg aattacaacc tgtagacatc aaaactctac cacatcctgg attcccgact 1020

gatatgcaat cacaaatgat ggcattgtta ttaacggcaa atggtcataa agtcgtaacc 1080

gaaactgttt ttgaaaaccg ttttatgcat gttgcagagt tcaaacgtat gaatgctaat 1140

atcaatgtag aaggtcgtag tgctaaactt gaaggtaaaa gtcaattgca aggtgcacaa 1200

gttaaagcga ctgatttaag agcagcagcc gccttaattt tagctggatt agttgctgat 1260

ggtaaaacaa gcgttactga attaacgcac ctagatagag gctatgttga cttacacggt 1320

aaattgaagc aattaggtgc agacattgaa cgtattaacg attaattcag taaattaata 1380

taatggagga tttcaaccat ggaaacaatt tttgattata accaaattaa 1430

<210> 22
<211> 421
<212> PRT
<213> Staphylococcus aureus

<400> 22

Met Asp Lys Ile Val Ile Lys Gly Gly Asn Lys Leu Thr Gly Glu Val
1 5 10 15

Lys Val Glu Gly Ala Lys Asn Ala Val Leu Pro Ile Leu Thr Ala Ser
20 25 30

Leu Leu Ala Ser Asp Lys Pro Ser Lys Leu Val Asn Val Pro Ala Leu
35 40 45

Ser Asp Val Glu Thr Ile Asn Asn Val Leu Thr Thr Leu Asn Ala Asp
50 55 60

Val Thr Tyr Lys Lys Asp Glu Asn Ala Val Val Val Asp Ala Thr Lys
65 70 75 80

Thr Leu Asn Glu Glu Ala Pro Tyr Glu Tyr Val Ser Lys Met Arg Ala
85 90 95

Ser Ile Leu Val Met Gly Pro Leu Leu Ala Arg Leu Gly His Ala Ile
100 105 110

Val Ala Leu Pro Gly Gly Cys Ala Ile Gly Ser Arg Pro Ile Glu Gln
115 120 125

His Ile Lys Gly Phe Glu Ala Leu Gly Ala Glu Ile His Leu Glu Asn
130 135 140

Gly Asn Ile Tyr Ala Asn Ala Lys Asp Gly Leu Lys Gly Thr Ser Ile
145 150 155 160

His Leu Asp Phe Pro Ser Val Gly Ala Thr Gln Asn Ile Ile Met Ala
165 170 175

Ala Ser Leu Ala Lys Gly Lys Thr Leu Ile Glu Asn Ala Ala Lys Glu
180 185 190

Pro Glu Ile Val Asp Leu Ala Asn Tyr Ile Asn Glu Met Gly Gly Arg
195 200 205

Ile Thr Gly Ala Gly Thr Asp Thr Ile Thr Ile Asn Gly Val Glu Ser
210 215 220

```
Leu His Gly Val Glu His Ala Ile Ile Pro Asp Arg Ile Glu Ala Gly
225                 230                 235                 240

Thr Leu Leu Ile Ala Gly Ala Ile Thr Arg Gly Asp Ile Phe Val Arg
                245                 250                 255

Gly Ala Ile Lys Glu His Met Ala Ser Leu Val Tyr Lys Leu Glu Glu
            260                 265                 270

Met Gly Val Glu Leu Asp Tyr Gln Glu Asp Gly Ile Arg Val Arg Ala
        275                 280                 285

Glu Gly Glu Leu Gln Pro Val Asp Ile Lys Thr Leu Pro His Pro Gly
    290                 295                 300

Phe Pro Thr Asp Met Gln Ser Gln Met Met Ala Leu Leu Leu Thr Ala
305                 310                 315                 320

Asn Gly His Lys Val Val Thr Glu Thr Val Phe Glu Asn Arg Phe Met
                325                 330                 335

His Val Ala Glu Phe Lys Arg Met Asn Ala Asn Ile Asn Val Glu Gly
            340                 345                 350

Arg Ser Ala Lys Leu Glu Gly Lys Ser Gln Leu Gln Gly Ala Gln Val
        355                 360                 365

Lys Ala Thr Asp Leu Arg Ala Ala Ala Ala Leu Ile Leu Ala Gly Leu
    370                 375                 380

Val Ala Asp Gly Lys Thr Ser Val Thr Glu Leu Thr His Leu Asp Arg
385                 390                 395                 400

Gly Tyr Val Asp Leu His Gly Lys Leu Lys Gln Leu Gly Ala Asp Ile
                405                 410                 415

Glu Arg Ile Asn Asp
            420
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<210> 23
<211> 2204
<212> DNA
<213> Staphylococcus aureus

<400> 23

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agaaaaatgg ctcaatcgaa ctagatatta tctttaaatc acaagggcca aaacgtttgt     60

tagcgcaatt tgcaccaatt gaaaaaagga ggattaaggg atggctgatt tatcgtctcg    120

tgtgaacgag ttacatgatt tattaaatca atacagttat gaatactatg tagaggataa    180

tccatctgta ccagatagtg aatatgacaa attacttcat gaactgatta aaatagaaga    240

ggagcatcct gagtataaga ctgtagattc tccaacagtt agagttggcg gtgaagccca    300

agcctctttc aataaagtca accatgacac gccaatgtta agtttaggga atgcatttaa    360
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tgaggatgat ttgagaaaat tcgaccaacg catacgtgaa caaattggca acgttgaata 420

tatgtgcgaa ttaaaaattg atggcttagc agtatcattg aaatatgttg atggatactt 480

cgttcaaggt ttaacacgtg gtgatggaac aacaggtgaa gatattaccg aaaatttaaa 540

aacaattcat gcgatacctt tgaaaatgaa agaaccatta aatgtagaag ttcgtggtga 600

agcatatatg ccgagacgtt cattttacg attaaatgaa gaaaaagaaa aaaatgatga 660

gcagttattt gcaaatccaa gaaacgctgc tgcgggatca ttaagacagt tagattctaa 720

attaacggca aaacgaaagc taagcgtatt tatatatagt gtcaatgatt tcactgattt 780

caatgcgcgt tcgcaaagtg aagcattaga tgagttagat aaattaggtt ttacaacgaa 840

taaaaatага gcgcgtgtaa ataatatcga tggtgtttta gagtatattg aaaaatggac 900

aagccaaaga gagtcattac cttatgatat tgatgggatt gttattaagg ttaatgattt 960

agatcaacag gatgagatgg gattcacaca aaaatctcct agatgggcca ttgcttataa 1020

atttccagct gaggaagtag taactaaatt attagatatt gaattaagta ttggacgaac 1080

aggtgtagtc acacctactg ctattttaga accagtaaaa gtrgctggta caactgtatc 1140

aagagcatct ttgcacaatg aggatttaat tcatgacaga gatattcgaa ttggtgatag 1200

tgttgtagtg aaaaaagcag gtgacatcat acctgaagtt gtacgtagta ttccagaacg 1260

tagacctgag gatgctgtca catatcatat gccaacccat tgtccaagtt gtggacatga 1320

attagtacgt attgaaggcg aagtagcact tcgttgcatt aatccaaaat gccaagcaca 1380

acttgttgaa ggattgattc actttgtatc aagacaagcc atgaatattg atggtttagg 1440

cactaaaatt attcaacagc tttatcaaag cgaattaatt aaagatgttg ctgatatttt 1500

ctatttaaca gaagaagatt tattaccttt agacagaatg gggcagaaaa aagttgataa 1560

tttattagct gccattcaac aagctaagga caactcttta gaaaatttat tatttggtct 1620

aggtattagg catttaggtg ttaaagcgag ccaagtgtta gcagaaaaat atgaaacgat 1680

agatcgatta ctaacggtaa ctgaagcgga attagtagaa attcatgata taggtgataa 1740

agtagcacaa tctgtagtta cttatttaga aaatgaagat attcgtgctt taattcaaaa 1800

attaaaagat aaacatgtta atatgattta taaaggtatc aaaacatcag atattgaagg 1860

acatcctgaa tttagtggta aaacgatagt actgactggt aagytacatc aaatgacacg 1920

caatgaagca tctaaatggc ttgcatcaca aggtgctaaa gttacaagta gcgttactaa 1980

aaatacagat gtcgttattg ctggtgaaga tgcaggttca aaattaacaa aagcacaaag 2040

tttaggtatt gaaatttgga cagagcaaca atttgtagat aagcaaaatg aattaaatag 2100

ttagaggggt atgtcgatga agcgtacatt agtattattg attacagcta tctttatact 2160

cgctgcttgt ggtaaccata aggatgacca ggctggaaaa gata 2204

<210> 24
<211> 667
<212> PRT
<213> Staphylococcus aureus

<400> 24

Met Ala Asp Leu Ser Ser Arg Val Asn Glu Leu His Asp Leu Leu Asn
1 5 10 15

Gln Tyr Ser Tyr Glu Tyr Tyr Val Glu Asp Asn Pro Ser Val Pro Asp
20 25 30

Ser Glu Tyr Asp Lys Leu Leu His Glu Leu Ile Lys Ile Glu Glu Glu
35 40 45

His Pro Glu Tyr Lys Thr Val Asp Ser Pro Thr Val Arg Val Gly Gly
50 55 60

Glu Ala Gln Ala Ser Phe Asn Lys Val Asn His Asp Thr Pro Met Leu
65 70 75 80

Ser Leu Gly Asn Ala Phe Asn Glu Asp Asp Leu Arg Lys Phe Asp Gln
85 90 95

Arg Ile Arg Glu Gln Ile Gly Asn Val Glu Tyr Met Cys Glu Leu Lys
100 105 110

Ile Asp Gly Leu Ala Val Ser Leu Lys Tyr Val Asp Gly Tyr Phe Val
115 120 125

Gln Gly Leu Thr Arg Gly Asp Gly Thr Thr Gly Glu Asp Ile Thr Glu
130 135 140

Asn Leu Lys Thr Ile His Ala Ile Pro Leu Lys Met Lys Glu Pro Leu
145 150 155 160

Asn Val Glu Val Arg Gly Glu Ala Tyr Met Pro Arg Arg Ser Phe Leu
165 170 175

Arg Leu Asn Glu Glu Lys Glu Lys Asn Asp Glu Gln Leu Phe Ala Asn
180 185 190

Pro Arg Asn Ala Ala Ala Gly Ser Leu Arg Gln Leu Asp Ser Lys Leu
195 200 205

Thr Ala Lys Arg Lys Leu Ser Val Phe Ile Tyr Ser Val Asn Asp Phe
210 215 220

Thr Asp Phe Asn Ala Arg Ser Gln Ser Glu Ala Leu Asp Glu Leu Asp
225 230 235 240

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Lys Leu Gly Phe Thr Thr Asn Lys Asn Arg Ala Arg Val Asn Asn Ile
                245                 250                 255

Asp Gly Val Leu Glu Tyr Ile Glu Lys Trp Thr Ser Gln Arg Glu Ser
            260                 265                 270

Leu Pro Tyr Asp Ile Asp Gly Ile Val Ile Lys Val Asn Asp Leu Asp
        275                 280                 285

Gln Gln Asp Glu Met Gly Phe Thr Gln Lys Ser Pro Arg Trp Ala Ile
    290                 295                 300

Ala Tyr Lys Phe Pro Ala Glu Glu Val Val Thr Lys Leu Leu Asp Ile
305                 310                 315                 320

Glu Leu Ser Ile Gly Arg Thr Gly Val Val Thr Pro Thr Ala Ile Leu
                325                 330                 335

Glu Pro Val Lys Val Ala Gly Thr Thr Val Ser Arg Ala Ser Leu His
            340                 345                 350

Asn Glu Asp Leu Ile His Asp Arg Asp Ile Arg Ile Gly Asp Ser Val
        355                 360                 365

Val Val Lys Lys Ala Gly Asp Ile Ile Pro Glu Val Val Arg Ser Ile
    370                 375                 380

Pro Glu Arg Arg Pro Glu Asp Ala Val Thr Tyr His Met Pro Thr His
385                 390                 395                 400

Cys Pro Ser Cys Gly His Glu Leu Val Arg Ile Glu Gly Glu Val Ala
                405                 410                 415

Leu Arg Cys Ile Asn Pro Lys Cys Gln Ala Gln Leu Val Glu Gly Leu
            420                 425                 430

Ile His Phe Val Ser Arg Gln Ala Met Asn Ile Asp Gly Leu Gly Thr
        435                 440                 445

Lys Ile Ile Gln Gln Leu Tyr Gln Ser Glu Leu Ile Lys Asp Val Ala
    450                 455                 460

Asp Ile Phe Tyr Leu Thr Glu Glu Asp Leu Leu Pro Leu Asp Arg Met
465                 470                 475                 480

Gly Gln Lys Lys Val Asp Asn Leu Leu Ala Ala Ile Gln Gln Ala Lys
                485                 490                 495

Asp Asn Ser Leu Glu Asn Leu Leu Phe Gly Leu Gly Ile Arg His Leu
            500                 505                 510

Gly Val Lys Ala Ser Gln Val Leu Ala Glu Lys Tyr Glu Thr Ile Asp
        515                 520                 525

Arg Leu Leu Thr Val Thr Glu Ala Glu Leu Val Glu Ile His Asp Ile
    530                 535                 540
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Gly Asp Lys Val Ala Gln Ser Val Val Thr Tyr Leu Glu Asn Glu Asp
545                 550                 555                 560

Ile Arg Ala Leu Ile Gln Lys Leu Lys Asp Lys His Val Asn Met Ile
                565                 570                 575

Tyr Lys Gly Ile Lys Thr Ser Asp Ile Glu Gly His Pro Glu Phe Ser
            580                 585                 590

Gly Lys Thr Ile Val Leu Thr Gly Lys Leu His Gln Met Thr Arg Asn
        595                 600                 605

Glu Ala Ser Lys Trp Leu Ala Ser Gln Gly Ala Lys Val Thr Ser Ser
    610                 615                 620

Val Thr Lys Asn Thr Asp Val Val Ile Ala Gly Glu Asp Ala Gly Ser
625                 630                 635                 640

Lys Leu Thr Lys Ala Gln Ser Leu Gly Ile Glu Ile Trp Thr Glu Gln
                645                 650                 655

Gln Phe Val Asp Lys Gln Asn Glu Leu Asn Ser
            660                 665
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<210> 25
<211> 959
<212> DNA
<213> Staphylococcus aureus

<400> 25

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tgtctcactc actttccaaa atactaaagt aacatcttta gtatatcaaa gaatttttgc     60

tataataagt tataattata taaaaaagga acgggataaa atgattgtaa aaacagaaga    120

agaattacaa gcgttaaaag aaattggata catatgcgct aaagtgcgca atacaatgca    180

agctgcaacc aaaccaggta tcactacgaa agagcttgat aatattgcga aagagttatt    240

tgaagaatac ggtgctattt ctgcgccaat tcatgatgaa aattttcctg gtcaaacgtg    300

tattagtgtc aatgaagagg tggcacatgg gattccaagt aagcgtgtca ttcgtgaagg    360

agatttagta aatattgatg tatcggcttt gaagaatggc tattatgcag atacaggcat    420

ttcatttgtc gttggagaat cagatgatcc aatgaaacaa aaagtatgtg acgtagcaac    480

gatggcattt gagaatgcaa ttgcaaaagt aaaaccgggt actaagttaa gtaacattgg    540

taaagcggtg cataatacag ctagacaaaa tgatttgaaa gtcattaaaa acttaacagg    600

tcatggtgtt ggtttatcat tacatgaagc accagcacat gtacttaatt actttgatcc    660

aaaagacaaa acattattaa ctgaaggtat ggtattagct attgaaccgt ttatctcatc    720

aaatgcatca tttgttacag aaggtaaaaa tgaatgggct tttgaaacga gcgataaaag    780
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ttttgttgct caaattgagc atacggttat cgtgactaag gatggtccga ttttaacgac 840

aaagattgaa gaagaatagt tcaacatata ctaagactaa agtatgaaca tcatttagtt 900

ccggagccta ttcatattgg tttcggaact gttttataat aattaagaac acaatcaat 959

<210> 26
<211> 252
<212> PRT
<213> Staphylococcus aureus

<400> 26

Met Ile Val Lys Thr Glu Glu Glu Leu Gln Ala Leu Lys Glu Ile Gly
1 5 10 15

Tyr Ile Cys Ala Lys Val Arg Asn Thr Met Gln Ala Ala Thr Lys Pro
20 25 30

Gly Ile Thr Thr Lys Glu Leu Asp Asn Ile Ala Lys Glu Leu Phe Glu
35 40 45

Glu Tyr Gly Ala Ile Ser Ala Pro Ile His Asp Glu Asn Phe Pro Gly
50 55 60

Gln Thr Cys Ile Ser Val Asn Glu Glu Val Ala His Gly Ile Pro Ser
65 70 75 80

Lys Arg Val Ile Arg Glu Gly Asp Leu Val Asn Ile Asp Val Ser Ala
85 90 95

Leu Lys Asn Gly Tyr Tyr Ala Asp Thr Gly Ile Ser Phe Val Val Gly
100 105 110

Glu Ser Asp Asp Pro Met Lys Gln Lys Val Cys Asp Val Ala Thr Met
115 120 125

Ala Phe Glu Asn Ala Ile Ala Lys Val Lys Pro Gly Thr Lys Leu Ser
130 135 140

Asn Ile Gly Lys Ala Val His Asn Thr Ala Arg Gln Asn Asp Leu Lys
145 150 155 160

Val Ile Lys Asn Leu Thr Gly His Gly Val Gly Leu Ser Leu His Glu
165 170 175

Ala Pro Ala His Val Leu Asn Tyr Phe Asp Pro Lys Asp Lys Thr Leu
180 185 190

Leu Thr Glu Gly Met Val Leu Ala Ile Glu Pro Phe Ile Ser Ser Asn
195 200 205

Ala Ser Phe Val Thr Glu Gly Lys Asn Glu Trp Ala Phe Glu Thr Ser
210 215 220

Asp Lys Ser Phe Val Ala Gln Ile Glu His Thr Val Ile Val Thr Lys

225 230 235 240

Asp Gly Pro Ile Leu Thr Thr Lys Ile Glu Glu Glu
245 250

<210> 27
<211> 3400
<212> DNA
<213> Staphylococcus aureus

<400> 27
tatacagttt atatgaaatt aaagtagcac ctcataaata cttagatttt taattggaaa 60

tttgatacaa tttagtgatg aatgacttaa aggaggcttt tattaatgac aaaagtaaca 120

cgtgaagaag ttgagcatat cgcgaatctt gcaagacttc aaatttctcc tgaagaaacg 180

gaagaaatgg ccaacacatt agaaagcatt ttagattttg caaaacaaaa tgatagcgct 240

gatacagaag gcgttgaacc tacatatcac gttttagatt tacaaaacgt tttacgtgaa 300

gataaagcaa ttaaaggtat tccacaagaa ttagctttga aaaatgccaa agaaacagaa 360

gatggacaat ttaaagtgcc tacaatcatg aatgaggagg acgcgtaaga tgagcattcg 420

ctacgaatcg gttgagaatt tattaacttt aataaaagac aaaaaaatca aaccatctga 480

tgttgttaaa gatatatatg atgcaattga agagactgat ccaacaatta agtcttttct 540

agcgctggat aaagaaaatg caatcaaaaa agcgcaagaa ttggatgaat tacaagcaaa 600

agatcaaatg gatggcaaat tatttggtat tccaatgggt ataaaagata acattattac 660

aaacggatta gaaacaacat gtgcaagtaa aatgttagaa ggttttgtgc caatttacga 720

atctactgta atggaaaaac tacataatga aaatgccgtt ttaatcggta aattaaatat 780

ggatgagttt gcaatgggtg gttcaacaga aacatcttat ttcaaaaaaa cagttaaccc 840

atttgaccat aaagcagtgc caggtggttc atcaggtgga tctgcagcag cagttgcagc 900

tggcttagta ccatttagct taggttcaga cacaggtggt tcaattagac aaccggctgc 960

atattgtggc gttgtcggta tgaaaccaac atacggtcgt gtatctcgat ttggattagt 1020

tgcttttgca tcttcattag accaaattgg tccattgact cgaaatgtaa aagataatgc 1080

aatcgtatta gaagctattt ctggtgcaga tgttaatgac tctacaagtg caccagttga 1140

tgatgtagac tttacatctg aaattggtaa agatattaaa ggattaaaag ttgcattacc 1200

taaagaatac ttaggtgaag gtgtagctga tgacgtaaaa gaagcagttc aaaacgctgt 1260

agaaacttta aaatctttag gtgctgtcgt tgaggaagta tcattgccaa atactaaatt 1320

tggtattcca tcatattacg tgattgcatc atcagaagct tcgtcaaacc tttctcgttt 1380

tgacggaatt cgttatggtt atcattctaa agaagctcat tcattagaag aattatataa 1440

aatgtcaaga tctgaaggtt tcggtaaaga agtaaaacgt cgtattttct taggtacatt 1500

tgcattaagt tcaggttact atgatgctta ctataaaaaa tctcaaaaag ttagaacatt 1560

gattaaaaat gactttgata aagtattcga aaattatgat gtagtagttg gtccaacagc 1620

gcctacaact gcgtttaatt taggtgaaga aattgatgat ccattaacaa tgtatgccaa 1680

tgatttatta acaacaccag taaacttagc tggattacct ggtatttctg ttccttgtgg 1740

acaatcaaat ggccgaccaa tcggtttaca gttcattggt aaaccattcg atgaaaaaac 1800

gttatatcgt gtcgcttatc aatatgaaac acaatacaat ttacatgacg tttatgaaaa 1860

attataagga gtggaaatca tgcattttga aacagttata ggacttgaag ttcacgtaga 1920

gttaaaaacg gactcaaaaa tgttttctcc atcaccagcg cattttggag cagaacctaa 1980

ctcaaataca aatgttatcg acttagcata tccaggtgtc ttaccagttg ttaataagcg 2040

tgcagtagac tgggcaatgc gtgctgcaat ggcactaaat atggaaatcg caacagaatc 2100

taagtttgac cgtaagaact atttctatcc agataatcca aaagcatatc aaatttctca 2160

atttgatcaa ccaattggtg aaaatggata tatcgatatc gaagtcgacg gtgaaacaaa 2220

acgaatcggt attactcgtc ttcacatgga agaagatgct ggtaagtcaa cacataaagg 2280

tgagtattca ttagttgact tgaaccgtca aggtacaccg ctaattgaaa tcgtatctga 2340

accagatatt cgttcaccta aagaagcata tgcatattta gaaaaattgc gttcaattat 2400

tcaatacact ggtgtatcag acgttaagat ggaagaggga tctttacgtt gtgatgctaa 2460

catctcttta cgtccatatg gtcaagaaaa atttggtact aaagccgaat tgaaaaactt 2520

aaactcattt aactatgtac gtaaaggttt agaatatgaa gaaaaacgcc aagaagaaga 2580

attgttaaat ggtggagaaa tcggacaaga aacacgtcga tttgatgaat ctacaggtaa 2640

aacaatttta atgcgtgtta aagaaggttc tgatgattac cgttacttcc cagagcctga 2700

cattgtacct ttatatattg atgatgcttg gaaagagcgt gttcgtcaga caattcctga 2760

attaccagat gaacgtaaag ctaagtatgt aaatgaatta ggtttacctg catacgatgc 2820

acacgtatta acattgacta aagaaatgtc agatttcttt gaatcaacaa ttgaacacgg 2880

tgcagatgtt aaattaacat ctaactggtt aatgggtggc gtaaacgaat atttaaataa 2940

aaatcaagta gaattattag atactaaatt aacaccagaa aatttagcag gtatgattaa 3000

acttatcgaa gacggaacaa tgagcagtaa aattgcgaag aaagtcttcc cagagttagc 3060

agctaaaggt ggtaatgcta aacagattat ggaagataat ggcttagttc aaatttctga 3120

tgaagcaaca cttctaaaat ttgtaaatga agcattagac aataacgaac aatcagttga 3180

agattacaaa aatggtaaag gcaaagctat gggcttctta gttggtcaaa ttatgaaagc 3240

gtctaaaggt caagctaatc cacaattagt aaatcaacta ttaaaacaag aattagataa 3300

aagataattt aaatcatcaa actatgaaga tttaaaaaat aaacccttga ttgctgactt 3360

agatgcaatc gagggtttat ttatatctat agaagtcaaa 3400

<210> 28
<211> 485
<212> PRT
<213> Staphylococcus aureus

<400> 28

Met Ser Ile Arg Tyr Glu Ser Val Glu Asn Leu Leu Thr Leu Ile Lys
1 5 10 15

Asp Lys Lys Ile Lys Pro Ser Asp Val Val Lys Asp Ile Tyr Asp Ala
20 25 30

Ile Glu Glu Thr Asp Pro Thr Ile Lys Ser Phe Leu Ala Leu Asp Lys
35 40 45

Glu Asn Ala Ile Lys Lys Ala Gln Glu Leu Asp Glu Leu Gln Ala Lys
50 55 60

Asp Gln Met Asp Gly Lys Leu Phe Gly Ile Pro Met Gly Ile Lys Asp
65 70 75 80

Asn Ile Ile Thr Asn Gly Leu Glu Thr Thr Cys Ala Ser Lys Met Leu
85 90 95

Glu Gly Phe Val Pro Ile Tyr Glu Ser Thr Val Met Glu Lys Leu His
100 105 110

Asn Glu Asn Ala Val Leu Ile Gly Lys Leu Asn Met Asp Glu Phe Ala
115 120 125

Met Gly Gly Ser Thr Glu Thr Ser Tyr Phe Lys Lys Thr Val Asn Pro
130 135 140

Phe Asp His Lys Ala Val Pro Gly Gly Ser Ser Gly Gly Ser Ala Ala
145 150 155 160

Ala Val Ala Ala Gly Leu Val Pro Phe Ser Leu Gly Ser Asp Thr Gly
165 170 175

Gly Ser Ile Arg Gln Pro Ala Ala Tyr Cys Gly Val Val Gly Met Lys
180 185 190

Pro Thr Tyr Gly Arg Val Ser Arg Phe Gly Leu Val Ala Phe Ala Ser
195 200 205

```
Ser Leu Asp Gln Ile Gly Pro Leu Thr Arg Asn Val Lys Asp Asn Ala
    210                 215                 220

Ile Val Leu Glu Ala Ile Ser Gly Ala Asp Val Asn Asp Ser Thr Ser
225                 230                 235                 240

Ala Pro Val Asp Asp Val Asp Phe Thr Ser Glu Ile Gly Lys Asp Ile
                245                 250                 255

Lys Gly Leu Lys Val Ala Leu Pro Lys Glu Tyr Leu Gly Glu Gly Val
            260                 265                 270

Ala Asp Asp Val Lys Glu Ala Val Gln Asn Ala Val Glu Thr Leu Lys
        275                 280                 285

Ser Leu Gly Ala Val Val Glu Glu Val Ser Leu Pro Asn Thr Lys Phe
    290                 295                 300

Gly Ile Pro Ser Tyr Tyr Val Ile Ala Ser Ser Glu Ala Ser Ser Asn
305                 310                 315                 320

Leu Ser Arg Phe Asp Gly Ile Arg Tyr Gly Tyr His Ser Lys Glu Ala
                325                 330                 335

His Ser Leu Glu Glu Leu Tyr Lys Met Ser Arg Ser Glu Gly Phe Gly
            340                 345                 350

Lys Glu Val Lys Arg Arg Ile Phe Leu Gly Thr Phe Ala Leu Ser Ser
        355                 360                 365

Gly Tyr Tyr Asp Ala Tyr Tyr Lys Lys Ser Gln Lys Val Arg Thr Leu
    370                 375                 380

Ile Lys Asn Asp Phe Asp Lys Val Phe Glu Asn Tyr Asp Val Val Val
385                 390                 395                 400

Gly Pro Thr Ala Pro Thr Thr Ala Phe Asn Leu Gly Glu Glu Ile Asp
                405                 410                 415

Asp Pro Leu Thr Met Tyr Ala Asn Asp Leu Leu Thr Thr Pro Val Asn
            420                 425                 430

Leu Ala Gly Leu Pro Gly Ile Ser Val Pro Cys Gly Gln Ser Asn Gly
        435                 440                 445

Arg Pro Ile Gly Leu Gln Phe Ile Gly Lys Pro Phe Asp Glu Lys Thr
    450                 455                 460

Leu Tyr Arg Val Ala Tyr Gln Tyr Glu Thr Gln Tyr Asn Leu His Asp
465                 470                 475                 480

Val Tyr Glu Lys Leu
                485
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<210> 29
<211> 475

<212> PRT
<213> Staphylococcus aureus

<400> 29

Met His Phe Glu Thr Val Ile Gly Leu Glu Val His Val Glu Leu Lys
1 5 10 15

Thr Asp Ser Lys Met Phe Ser Pro Ser Pro Ala His Phe Gly Ala Glu
20 25 30

Pro Asn Ser Asn Thr Asn Val Ile Asp Leu Ala Tyr Pro Gly Val Leu
35 40 45

Pro Val Val Asn Lys Arg Ala Val Asp Trp Ala Met Arg Ala Ala Met
50 55 60

Ala Leu Asn Met Glu Ile Ala Thr Glu Ser Lys Phe Asp Arg Lys Asn
65 70 75 80

Tyr Phe Tyr Pro Asp Asn Pro Lys Ala Tyr Gln Ile Ser Gln Phe Asp
85 90 95

Gln Pro Ile Gly Glu Asn Gly Tyr Ile Asp Ile Glu Val Asp Gly Glu
100 105 110

Thr Lys Arg Ile Gly Ile Thr Arg Leu His Met Glu Glu Asp Ala Gly
115 120 125

Lys Ser Thr His Lys Gly Glu Tyr Ser Leu Val Asp Leu Asn Arg Gln
130 135 140

Gly Thr Pro Leu Ile Glu Ile Val Ser Glu Pro Asp Ile Arg Ser Pro
145 150 155 160

Lys Glu Ala Tyr Ala Tyr Leu Glu Lys Leu Arg Ser Ile Ile Gln Tyr
165 170 175

Thr Gly Val Ser Asp Val Lys Met Glu Glu Gly Ser Leu Arg Cys Asp
180 185 190

Ala Asn Ile Ser Leu Arg Pro Tyr Gly Gln Glu Lys Phe Gly Thr Lys
195 200 205

Ala Glu Leu Lys Asn Leu Asn Ser Phe Asn Tyr Val Arg Lys Gly Leu
210 215 220

Glu Tyr Glu Glu Lys Arg Gln Glu Glu Glu Leu Leu Asn Gly Gly Glu
225 230 235 240

Ile Gly Gln Glu Thr Arg Arg Phe Asp Glu Ser Thr Gly Lys Thr Ile
245 250 255

Leu Met Arg Val Lys Glu Gly Ser Asp Asp Tyr Arg Tyr Phe Pro Glu
260 265 270

Pro Asp Ile Val Pro Leu Tyr Ile Asp Asp Ala Trp Lys Glu Arg Val

275 280 285

Arg Gln Thr Ile Pro Glu Leu Pro Asp Glu Arg Lys Ala Lys Tyr Val
290 295 300

Asn Glu Leu Gly Leu Pro Ala Tyr Asp Ala His Val Leu Thr Leu Thr
305 310 315 320

Lys Glu Met Ser Asp Phe Phe Glu Ser Thr Ile Glu His Gly Ala Asp
325 330 335

Val Lys Leu Thr Ser Asn Trp Leu Met Gly Gly Val Asn Glu Tyr Leu
340 345 350

Asn Lys Asn Gln Val Glu Leu Leu Asp Thr Lys Leu Thr Pro Glu Asn
355 360 365

Leu Ala Gly Met Ile Lys Leu Ile Glu Asp Gly Thr Met Ser Ser Lys
370 375 380

Ile Ala Lys Lys Val Phe Pro Glu Leu Ala Ala Lys Gly Gly Asn Ala
385 390 395 400

Lys Gln Ile Met Glu Asp Asn Gly Leu Val Gln Ile Ser Asp Glu Ala
405 410 415

Thr Leu Leu Lys Phe Val Asn Glu Ala Leu Asp Asn Asn Glu Gln Ser
420 425 430

Val Glu Asp Tyr Lys Asn Gly Lys Gly Lys Ala Met Gly Phe Leu Val
435 440 445

Gly Gln Ile Met Lys Ala Ser Lys Gly Gln Ala Asn Pro Gln Leu Val
450 455 460

Asn Gln Leu Leu Lys Gln Glu Leu Asp Lys Arg
465 470 475

<210> 30
<211> 100
<212> PRT
<213> Staphylococcus aureus

<400> 30

Met Thr Lys Val Thr Arg Glu Glu Val Glu His Ile Ala Asn Leu Ala
1 5 10 15

Arg Leu Gln Ile Ser Pro Glu Glu Thr Glu Glu Met Ala Asn Thr Leu
20 25 30

Glu Ser Ile Leu Asp Phe Ala Lys Gln Asn Asp Ser Ala Asp Thr Glu
35 40 45

Gly Val Glu Pro Thr Tyr His Val Leu Asp Leu Gln Asn Val Leu Arg
50 55 60

Glu Asp Lys Ala Ile Lys Gly Ile Pro Gln Glu Leu Ala Leu Lys Asn
65 70 75 80

Ala Lys Glu Thr Glu Asp Gly Gln Phe Lys Val Pro Thr Ile Met Asn
85 90 95

Glu Glu Asp Ala
100

<210> 31
<211> 772
<212> DNA
<213> Staphylococcus aureus

<400> 31
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ataataataa atgaaacaat tatgttggag gtaaacacgc atgaaatgta ttgtaggtct 120

aggtaatata ggtaaacgtt ttgaacttac aagacataat atcggctttg aagtcgttga 180

ttatatttta gagaaaaata atttttcatt agataaacaa aagtttaaag gtgcatatac 240

aattgaacga atgaacggcg ataaagtgtt atttatcgaa ccaatgacaa tgatgaattt 300

gtcaggtgaa gcagttgcac cgattatgga ttattacaat gttaatccag aagatttaat 360

tgtcttatat gatgatttag atttagaaca aggacaagtt cgcttaagac aaaaaggaag 420

tgcgggcggt cacaatggta tgaaatcaat tattaaaatg cttggtacag accaatttaa 480

acgtattcgt attggtgtgg gaagaccaac gaatggtatg acggtacctg attatgtttt 540

acaacgcttt tcaaatgatg aaatggtaac gatggaaaaa gttatcgaac acgcagcacg 600

cgcaattgaa aagtttgttg aaacatcacg atttgaccat gttatgaatg aatttaatgg 660

tgaagtgaaa taatgacaat attgacaacg cttataaaag aagataatca ttttcaagac 720

cttaatcagg tatttggaca agcaaacaca ctagtaactg gtctttcccc gt 772

<210> 32
<211> 190
<212> PRT
<213> Staphylococcus aureus

<400> 32

Met Lys Cys Ile Val Gly Leu Gly Asn Ile Gly Lys Arg Phe Glu Leu
1 5 10 15

Thr Arg His Asn Ile Gly Phe Glu Val Val Asp Tyr Ile Leu Glu Lys
20 25 30

Asn Asn Phe Ser Leu Asp Lys Gln Lys Phe Lys Gly Ala Tyr Thr Ile
35 40 45

Glu Arg Met Asn Gly Asp Lys Val Leu Phe Ile Glu Pro Met Thr Met
50 55 60

Met Asn Leu Ser Gly Glu Ala Val Ala Pro Ile Met Asp Tyr Tyr Asn
65 70 75 80

Val Asn Pro Glu Asp Leu Ile Val Leu Tyr Asp Asp Leu Asp Leu Glu
85 90 95

Gln Gly Gln Val Arg Leu Arg Gln Lys Gly Ser Ala Gly Gly His Asn
100 105 110

Gly Met Lys Ser Ile Ile Lys Met Leu Gly Thr Asp Gln Phe Lys Arg
115 120 125

Ile Arg Ile Gly Val Gly Arg Pro Thr Asn Gly Met Thr Val Pro Asp
130 135 140

Tyr Val Leu Gln Arg Phe Ser Asn Asp Glu Met Val Thr Met Glu Lys
145 150 155 160

Val Ile Glu His Ala Ala Arg Ala Ile Glu Lys Phe Val Glu Thr Ser
165 170 175

Arg Phe Asp His Val Met Asn Glu Phe Asn Gly Glu Val Lys
180 185 190

<210> 33
<211> 1277
<212> DNA
<213> Staphylococcus aureus

<400> 33
tgatccgatt atcttagtag gtgccaatga aagttatgag ccacgttgtc gcgcgcacca 60

tatcgtagca cctagtgata ataataagga ggaattataa gtgtttgatc aattagatat 120

tgtagaagaa agatacgaac agttaaatga actgttaagt gacccagatg ttgtaaatga 180

ttcagataaa ttacgtaaat attctaaaga gcaagctgat ttacaaaaaa ctgtagatgt 240

ttatcgtaac tataaagcta aaaaagaaga attagctgat attgaagaaa tgttaagtga 300

gactgatgat aaagaagaag tagaaatgtt aaaagaggag agtaatggta ttaaagctga 360

acttccaaat cttgaagaag agcttaaaat attattgatt cctaaagatc ctaatgatga 420

caaagacgtt attgtagaaa taagagcagc agcaggtggt gatgaggctg cgatttttgc 480

tggtgattta atgcgtatgt attcaaagta tgctgaatca caaggattca aaactgaaat 540

agtagaagcg tctgaaagtg accatggtgg ttacaaagaa attagtttct cagtttctgg 600

taatggcgcg tatagtaaat tgaaatttga aaatggtgcg caccgcgttc aacgtgtgcc 660

tgaaacagaa tcaggtggac gtattcatac ttcaacagct acagtggcag ttttaccaga 720

agttgaagat gtagaaattg aaattagaaa tgaagattta aaaatcgaca cgtatcgttc 780

aagtggtgca ggtggtcagc acgtaaacac aactgactct gcagtacgta ttacccattt 840

accaactggt gtcattgcaa catcttctga gaagtctcaa attcaaaacc gtgaaaaagc 900

aatgaaagtg ttaaaagcac gtttatacga tatgaaagtt caagaagaac aacaaaagta 960

tgcgtcacaa cgtaaatcag cagtcggtac tggtgatcgt tcagaacgta ttcgaactta 1020

taattatcca caaagccgtg taacagacca tcgtataggt ctaacgcttc aaaaattagg 1080

gcaaattatg gaaggccatt tagaagaaat tatagatgca ctgactttat cagagcagac 1140

agataaattg aaagaactta ataatggtga attataaaga aaagttagat gaagcaattc 1200

atttaacaca acaaaaaggg tttgaacaaa cacgagctga atggttaatg ttagatgtat 1260

ttcaatggac gcgtacg 1277

<210> 34
<211> 358
<212> PRT
<213> Staphylococcus aureus

<400> 34

Val Phe Asp Gln Leu Asp Ile Val Glu Glu Arg Tyr Glu Gln Leu Asn
1 5 10 15

Glu Leu Leu Ser Asp Pro Asp Val Val Asn Asp Ser Asp Lys Leu Arg
20 25 30

Lys Tyr Ser Lys Glu Gln Ala Asp Leu Gln Lys Thr Val Asp Val Tyr
35 40 45

Arg Asn Tyr Lys Ala Lys Lys Glu Glu Leu Ala Asp Ile Glu Glu Met
50 55 60

Leu Ser Glu Thr Asp Asp Lys Glu Glu Val Glu Met Leu Lys Glu Glu
65 70 75 80

Ser Asn Gly Ile Lys Ala Glu Leu Pro Asn Leu Glu Glu Glu Leu Lys
85 90 95

Ile Leu Leu Ile Pro Lys Asp Pro Asn Asp Asp Lys Asp Val Ile Val
100 105 110

Glu Ile Arg Ala Ala Ala Gly Gly Asp Glu Ala Ala Ile Phe Ala Gly
115 120 125

Asp Leu Met Arg Met Tyr Ser Lys Tyr Ala Glu Ser Gln Gly Phe Lys
130 135 140

Thr Glu Ile Val Glu Ala Ser Glu Ser Asp His Gly Gly Tyr Lys Glu

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145                 150                 155                 160

Ile Ser Phe Ser Val Ser Gly Asn Gly Ala Tyr Ser Lys Leu Lys Phe
                165                 170                 175

Glu Asn Gly Ala His Arg Val Gln Arg Val Pro Glu Thr Glu Ser Gly
            180                 185                 190

Gly Arg Ile His Thr Ser Thr Ala Thr Val Ala Val Leu Pro Glu Val
        195                 200                 205

Glu Asp Val Glu Ile Glu Ile Arg Asn Glu Asp Leu Lys Ile Asp Thr
    210                 215                 220

Tyr Arg Ser Ser Gly Ala Gly Gly Gln His Val Asn Thr Thr Asp Ser
225                 230                 235                 240

Ala Val Arg Ile Thr His Leu Pro Thr Gly Val Ile Ala Thr Ser Ser
                245                 250                 255

Glu Lys Ser Gln Ile Gln Asn Arg Glu Lys Ala Met Lys Val Leu Lys
            260                 265                 270

Ala Arg Leu Tyr Asp Met Lys Val Gln Glu Glu Gln Gln Lys Tyr Ala
        275                 280                 285

Ser Gln Arg Lys Ser Ala Val Gly Thr Gly Asp Arg Ser Glu Arg Ile
    290                 295                 300

Arg Thr Tyr Asn Tyr Pro Gln Ser Arg Val Thr Asp His Arg Ile Gly
305                 310                 315                 320

Leu Thr Leu Gln Lys Leu Gly Gln Ile Met Glu Gly His Leu Glu Glu
                325                 330                 335

Ile Ile Asp Ala Leu Thr Leu Ser Glu Gln Thr Asp Lys Leu Lys Glu
            340                 345                 350

Leu Asn Asn Gly Glu Leu
        355
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<210> 35
<211> 1315
<212> DNA
<213> Staphylococcus aureus

<400> 35

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atttcttaac attgttattt aacaaaatta tgttaaaatt tagcattata aaagatgcaa     60

atcaatgact tgaattgaaa tataaatagg agcgaatgct atggaattat cagaaatcaa    120

acgaaatata gataagtata atcaagattt aacacaaatt agggggtctc ttgacttaga    180

gaacaaagaa actaatattc aagaatatga agaaatgatg gcagaaccta atttttggga    240

taaccaaacg aaagcgcaag atattataga taaaaataat gcgttaaaag caatagttaa    300
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tggttataaa acactacaag cagaagtaga tgacatggat gctacttggg atttattaca 360

agaagaattt gatgaagaaa tgaaagaaga cttagagcaa gaggtcatta attttaaggc 420

taaagtggat gaatacgaat tgcaattatt attagatggg cctcacgatg ccaataacgc 480

aattctagag ttacatcctg gtgcaggtgg cacggagtct caagattggg ctaatatgct 540

atttagaatg tatcaacgtt attgtgagaa gaaaggcttt aaagttgaaa ctgttgatta 600

tctacctggg gatgaagcgg ggattaaaag tgtaacattg ctcatcaaag ggcataatgc 660

ttatggttat ttaaaagctg aaaaaggtgt acaccgacta gtacgaattt ctccatttga 720

ttcatcagga cgtcgtcata catcatttgc atcatgcgac gttattccag attttaataa 780

tgatgaaata gagattgaaa tcaatccgga tgatattaca gttgatacat tcagagcttc 840

tggtgcaggt ggtcagcata ttaacaaaac tgaatcggca atacgaatta cccaccaccc 900

ctcaggtata gttgttaata accaaaatga acgttctcaa attaaaaacc gtgaagcagc 960

tatgaaaatg ttaaagtcta aattatatca attaaaattg gaagagcagg cacgtgaaat 1020

ggctgaaatt cgtggcgaac aaaaagaaat cggctgggga agccaaatta gatcatatgt 1080

tttccatcca tactcaatgg tgaaagatca tcgtacgaac gaagaaacag gtaaggttga 1140

tgcagtgatg gatggagaca ttggaccatt tatcgaatca tatttaagac agacaatgtc 1200

gcacgattaa tatatatttt aaaaccgagg ctctaaaagg gcgtcggttt ttggtttttt 1260

taaaggtagc taaataaatt gtaaattaga ttttggaata tgatttgttt atgaa 1315

<210> 36
<211> 369
<212> PRT
<213> Staphylococcus aureus

<400> 36

Met Glu Leu Ser Glu Ile Lys Arg Asn Ile Asp Lys Tyr Asn Gln Asp
1 5 10 15

Leu Thr Gln Ile Arg Gly Ser Leu Asp Leu Glu Asn Lys Glu Thr Asn
20 25 30

Ile Gln Glu Tyr Glu Glu Met Met Ala Glu Pro Asn Phe Trp Asp Asn
35 40 45

Gln Thr Lys Ala Gln Asp Ile Ile Asp Lys Asn Asn Ala Leu Lys Ala
50 55 60

Ile Val Asn Gly Tyr Lys Thr Leu Gln Ala Glu Val Asp Asp Met Asp
65 70 75 80

```
Ala Thr Trp Asp Leu Leu Gln Glu Glu Phe Asp Glu Glu Met Lys Glu
                85                  90                  95

Asp Leu Glu Gln Glu Val Ile Asn Phe Lys Ala Lys Val Asp Glu Tyr
            100                 105                 110

Glu Leu Gln Leu Leu Leu Asp Gly Pro His Asp Ala Asn Asn Ala Ile
        115                 120                 125

Leu Glu Leu His Pro Gly Ala Gly Gly Thr Glu Ser Gln Asp Trp Ala
    130                 135                 140

Asn Met Leu Phe Arg Met Tyr Gln Arg Tyr Cys Glu Lys Lys Gly Phe
145                 150                 155                 160

Lys Val Glu Thr Val Asp Tyr Leu Pro Gly Asp Glu Ala Gly Ile Lys
                165                 170                 175

Ser Val Thr Leu Leu Ile Lys Gly His Asn Ala Tyr Gly Tyr Leu Lys
            180                 185                 190

Ala Glu Lys Gly Val His Arg Leu Val Arg Ile Ser Pro Phe Asp Ser
        195                 200                 205

Ser Gly Arg Arg His Thr Ser Phe Ala Ser Cys Asp Val Ile Pro Asp
    210                 215                 220

Phe Asn Asn Asp Glu Ile Glu Ile Glu Ile Asn Pro Asp Asp Ile Thr
225                 230                 235                 240

Val Asp Thr Phe Arg Ala Ser Gly Ala Gly Gly Gln His Ile Asn Lys
                245                 250                 255

Thr Glu Ser Ala Ile Arg Ile Thr His His Pro Ser Gly Ile Val Val
            260                 265                 270

Asn Asn Gln Asn Glu Arg Ser Gln Ile Lys Asn Arg Glu Ala Ala Met
        275                 280                 285

Lys Met Leu Lys Ser Lys Leu Tyr Gln Leu Lys Leu Glu Glu Gln Ala
    290                 295                 300

Arg Glu Met Ala Glu Ile Arg Gly Glu Gln Lys Glu Ile Gly Trp Gly
305                 310                 315                 320

Ser Gln Ile Arg Ser Tyr Val Phe His Pro Tyr Ser Met Val Lys Asp
                325                 330                 335

His Arg Thr Asn Glu Glu Thr Gly Lys Val Asp Ala Val Met Asp Gly
            340                 345                 350

Asp Ile Gly Pro Phe Ile Glu Ser Tyr Leu Arg Gln Thr Met Ser His
        355                 360                 365

Asp
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<210> 37
<211> 840
<212> DNA
<213> Staphylococcus aureus

<400> 37
aataactgaa aatatgatag aattggtaaa tgaatatctg gaaactggaa tgatagttga 60

aggaattaaa aataataaaa ttttagttga ggatgaataa aatgtcagct tttataactt 120

ttgagggccc agaaggctct ggaaaaacaa ctgtaattaa tgaagtttac catagattag 180

taaaagatta tgatgtcatt atgactagag aaccaggtgg tgttcctact ggtgaagaaa 240

tacgtaaaat tgtattagaa ggcaatgata tggacattag aactgaagca atgttatttg 300

ctgcatctag aagagaacat cttgtattaa aggtcatacc agctttaaaa gaaggtaagg 360

ttgtgttgtg tgatcgctat atcgatagtt cattagctta tcaaggttat gctagaggga 420

ttggcgttga agaagtaaga gcattaaacg aatttgcaat aaatggatta tatccagact 480

tgacgattta tttaaatgtt agtgctgaag taggtcgcga acgtattatt aaaaattcaa 540

gagatcaaaa tagattagat caagaagatt taaagtttca cgaaaaagta attgaaggtt 600

accaagaaat cattcataat gaatcacaac ggttcaaaag cgttaatgca gatcaacctc 660

ttgaaaatgt tgttgaagac acgtatcaaa ctatcatcaa atatttagaa aagatatgat 720

ataattgtta gaagaggtgt tataaaatga aaatgattat agcgatcgta caagatcaag 780

atagtcagga acttgcagat caacttgtta aaaataactt tagagcaaca aaattggcaa 840

<210> 38
<211> 205
<212> PRT
<213> Staphylococcus aureus

<400> 38

Met Ser Ala Phe Ile Thr Phe Glu Gly Pro Glu Gly Ser Gly Lys Thr
1 5 10 15

Thr Val Ile Asn Glu Val Tyr His Arg Leu Val Lys Asp Tyr Asp Val
20 25 30

Ile Met Thr Arg Glu Pro Gly Gly Val Pro Thr Gly Glu Glu Ile Arg
35 40 45

Lys Ile Val Leu Glu Gly Asn Asp Met Asp Ile Arg Thr Glu Ala Met
50 55 60

Leu Phe Ala Ala Ser Arg Arg Glu His Leu Val Leu Lys Val Ile Pro
65 70 75 80

Ala Leu Lys Glu Gly Lys Val Val Leu Cys Asp Arg Tyr Ile Asp Ser
85 90 95

Ser Leu Ala Tyr Gln Gly Tyr Ala Arg Gly Ile Gly Val Glu Glu Val
100 105 110

Arg Ala Leu Asn Glu Phe Ala Ile Asn Gly Leu Tyr Pro Asp Leu Thr
115 120 125

Ile Tyr Leu Asn Val Ser Ala Glu Val Gly Arg Glu Arg Ile Ile Lys
130 135 140

Asn Ser Arg Asp Gln Asn Arg Leu Asp Gln Glu Asp Leu Lys Phe His
145 150 155 160

Glu Lys Val Ile Glu Gly Tyr Gln Glu Ile Ile His Asn Glu Ser Gln
165 170 175

Arg Phe Lys Ser Val Asn Ala Asp Gln Pro Leu Glu Asn Val Val Glu
180 185 190

Asp Thr Tyr Gln Thr Ile Ile Lys Tyr Leu Glu Lys Ile
195 200 205

<210> 39
<211> 923
<212> DNA
<213> Staphylococcus aureus

<400> 39
aatgttgctt tattaaaatg taaatcattc taataaaacg acaactgtgt cttctttact 60

tgtatatgtt acatatattc acgatagaga ggataagaaa atggctcaaa tttctaaata 120

taaacgtgta gttttgaaac taagtggtga agcgttagct ggagaaaaag gatttggcat 180

aaatccagta attattaaaa gtgttgctga gcaagtggct gaagttgcta aaatggactg 240

tgaaatcgca gtaatcgttg gtggcggaaa catttggaga ggtaaaacag gtagtgactt 300

aggtatggac cgtggaactg ctgattacat gggtatgctt gcaactgtaa tgaatgcctt 360

agcattacaa gatagtttag aacaattgga ttgtgataca cgagtattaa catctattga 420

aatgaagcaa gtggctgaac cttatattcg tcgtcgtgca attagacact tagaaaagaa 480

acgcgtagtt atttttgctg caggtattgg aaacccatac ttctctacag atactacagc 540

ggcattacgt gctgcagaag ttgaagcaga tgttatttta atgggcaaaa ataatgtaga 600

tggtgtatat tctgcagatc ctaaagtaaa caaagatgcg gtaaaatatg aacatttaac 660

gcatattcaa atgcttcaag aaggtttaca agtaatggat tcaacagcat cctcattctg 720

tatggataat aacattccgt taactgtttt ctctattatg gaagaaggaa atattaaacg 780

tgctgttatg ggtgaaaaga taggtacgtt aattacaaaa taaatttaga ggtgtaaaat 840

aatgagtgac attattaatg aaactaaatc aagaatgcaa aaatcaatcg aaagcttatc 900

acgtgaatta gctaacatca gtg 923

<210> 40
<211> 240
<212> PRT
<213> Staphylococcus aureus

<400> 40

Met Ala Gln Ile Ser Lys Tyr Lys Arg Val Val Leu Lys Leu Ser Gly
1 5 10 15

Glu Ala Leu Ala Gly Glu Lys Gly Phe Gly Ile Asn Pro Val Ile Ile
20 25 30

Lys Ser Val Ala Glu Gln Val Ala Glu Val Ala Lys Met Asp Cys Glu
35 40 45

Ile Ala Val Ile Val Gly Gly Gly Asn Ile Trp Arg Gly Lys Thr Gly
50 55 60

Ser Asp Leu Gly Met Asp Arg Gly Thr Ala Asp Tyr Met Gly Met Leu
65 70 75 80

Ala Thr Val Met Asn Ala Leu Ala Leu Gln Asp Ser Leu Glu Gln Leu
85 90 95

Asp Cys Asp Thr Arg Val Leu Thr Ser Ile Glu Met Lys Gln Val Ala
100 105 110

Glu Pro Tyr Ile Arg Arg Arg Ala Ile Arg His Leu Glu Lys Lys Arg
115 120 125

Val Val Ile Phe Ala Ala Gly Ile Gly Asn Pro Tyr Phe Ser Thr Asp
130 135 140

Thr Thr Ala Ala Leu Arg Ala Ala Glu Val Glu Ala Asp Val Ile Leu
145 150 155 160

Met Gly Lys Asn Asn Val Asp Gly Val Tyr Ser Ala Asp Pro Lys Val
165 170 175

Asn Lys Asp Ala Val Lys Tyr Glu His Leu Thr His Ile Gln Met Leu
180 185 190

Gln Glu Gly Leu Gln Val Met Asp Ser Thr Ala Ser Ser Phe Cys Met
195 200 205

Asp Asn Asn Ile Pro Leu Thr Val Phe Ser Ile Met Glu Glu Gly Asn
210 215 220

Ile Lys Arg Ala Val Met Gly Glu Lys Ile Gly Thr Leu Ile Thr Lys
225 230 235 240

<210> 41
<211> 1013
<212> DNA
<213> Staphylococcus aureus

<400> 41
gatagcatcc atgtatagtg atagtattta caacaattat tataatacta tttagttaag 60

tagagaaata gttaaacatt tgaaagtgtg gtttaatgga atgtcagcaa taggaacagt 120

ttttaaagaa catgtaaaga acttttattt aattcaaaga ctggctcagt ttcaagttaa 180

aattatcaat catagtaact atttaggtgt ggcttgggaa ttaattaacc ctgttatgca 240

aattatggtt tactggatgg tttttggatt aggaataaga agtaatgcac caattcatgg 300

tgtacctttt gtttattggt tattggttgg tatcagtatg tggttcttca tcaaccaagg 360

tattttagaa ggtactaaag caattacaca aaagtttaat caagtatcga aaatgaactt 420

cccgttatcg ataataccga catatattgt gacaagtaga ttttatggac atttaggctt 480

acttttactt gtgataattg catgtatgtt tactggtatt tatccatcaa tacatatcat 540

tcaattattg atatatgtac cgttttgttt tttcttaact gcctcggtga cgttattaac 600

atcaacactc ggtgtgttag ttagagatac acaaatgtta atgcaagcaa tattaagaat 660

attattttac ttttcaccaa ttttgtggct accaaagaac catggtatca gtggtttaat 720

tcatgaaatg atgaaatata atccagttta ctttattgct gaatcatacc gtgcagcaat 780

tttatatcac gaatggtatt tcatggatca ttggaaatta atgttataca atttcggtat 840

tgttgccatt ttctttgcaa ttggtgcgta cttacacatg aaatatagag atcaatttgc 900

agacttcttg taatatattt atatgacgaa accccgctaa ccattaataa atggaagtgg 960

ggttcatttt tgtttataat ttaagtaaat aacatattaa gttggtgtat tat 1013

<210> 42
<211> 270
<212> PRT
<213> Staphylococcus aureus

<400> 42

Met Ser Ala Ile Gly Thr Val Phe Lys Glu His Val Lys Asn Phe Tyr
1 5 10 15

Leu Ile Gln Arg Leu Ala Gln Phe Gln Val Lys Ile Ile Asn His Ser
20 25 30

Asn Tyr Leu Gly Val Ala Trp Glu Leu Ile Asn Pro Val Met Gln Ile
35 40 45

Met Val Tyr Trp Met Val Phe Gly Leu Gly Ile Arg Ser Asn Ala Pro
50 55 60

Ile His Gly Val Pro Phe Val Tyr Trp Leu Leu Val Gly Ile Ser Met
65 70 75 80

Trp Phe Phe Ile Asn Gln Gly Ile Leu Glu Gly Thr Lys Ala Ile Thr
85 90 95

Gln Lys Phe Asn Gln Val Ser Lys Met Asn Phe Pro Leu Ser Ile Ile
100 105 110

Pro Thr Tyr Ile Val Thr Ser Arg Phe Tyr Gly His Leu Gly Leu Leu
115 120 125

Leu Leu Val Ile Ile Ala Cys Met Phe Thr Gly Ile Tyr Pro Ser Ile
130 135 140

His Ile Ile Gln Leu Leu Ile Tyr Val Pro Phe Cys Phe Phe Leu Thr
145 150 155 160

Ala Ser Val Thr Leu Leu Thr Ser Thr Leu Gly Val Leu Val Arg Asp
165 170 175

Thr Gln Met Leu Met Gln Ala Ile Leu Arg Ile Leu Phe Tyr Phe Ser
180 185 190

Pro Ile Leu Trp Leu Pro Lys Asn His Gly Ile Ser Gly Leu Ile His
195 200 205

Glu Met Met Lys Tyr Asn Pro Val Tyr Phe Ile Ala Glu Ser Tyr Arg
210 215 220

Ala Ala Ile Leu Tyr His Glu Trp Tyr Phe Met Asp His Trp Lys Leu
225 230 235 240

Met Leu Tyr Asn Phe Gly Ile Val Ala Ile Phe Phe Ala Ile Gly Ala
245 250 255

Tyr Leu His Met Lys Tyr Arg Asp Gln Phe Ala Asp Phe Leu
260 265 270

<210> 43
<211> 995
<212> DNA
<213> Staphylococcus aureus

<400> 43
taacaaaatc ttctatacac tttacaacag gttttaaaat ttaacaactg ttgagtagta 60

tattataatc tagataaatg tgaataagga aggtctacaa atgaacgttt cggtaaacat 120

taaaaatgta acaaaagaat atcgtattta tcgtacaaat aaagaacgta tgaaagatgc 180

gctcattccc aaacataaaa acaaaacatt tttcgcttta gatgacatta gtttaaaagc 240

atatgaaggt gacgtcatag ggcttgttgg catcaatggt tccggcaaat caacgttgag 300

caatatcatt ggcggttctt tgtcgcctac tgttggcaaa gtggatcgta atggtgaagt 360

cagcgttatc gcaattagtg ctggcttgag tggacaactt acagggattg aaaatatcga 420

atttaaaatg ttatgtatgg gctttaagcg aaaagaaatt aaagcgatga cacctaagat 480

tattgaattt agtgaacttg gtgagtttat ttatcaacca gttaaaaagt attcaagtgg 540

tatgcgtgca aaacttggtt tttcaattaa tatcacagtt aatccagata tcttagtcat 600

tgacgaagct ttatctgtag gtgaccaaac ttttgcacaa aaatgtttag ataaaattta 660

cgagtttaaa gagcaaaaca aaaccatctt tttcgttagt cataacttag gacaagtgag 720

acaatttttgt actaagattg cttggattga aggcggaaag ttaaaagatt acggtgaact 780

tgatgatgta ttacctaaat atgaagcttt ccttaacgat tttaaaaaga aatccaaagc 840

cgaacaaaaa gaatttagaa acaaactcga tgagtcccgc ttcgttatta aataaaccga 900

aaaaaccgag aatctccatt taaggatttc ctcggtttta tttttgtcat catgattatt 960

tcgccttttt tatttttctt tttgctttgg ctatt 995

<210> 44
<211> 264
<212> PRT
<213> Staphylococcus aureus

<400> 44

Met Asn Val Ser Val Asn Ile Lys Asn Val Thr Lys Glu Tyr Arg Ile
1 5 10 15

Tyr Arg Thr Asn Lys Glu Arg Met Lys Asp Ala Leu Ile Pro Lys His
20 25 30

Lys Asn Lys Thr Phe Phe Ala Leu Asp Asp Ile Ser Leu Lys Ala Tyr
35 40 45

Glu Gly Asp Val Ile Gly Leu Val Gly Ile Asn Gly Ser Gly Lys Ser
50 55 60

Thr Leu Ser Asn Ile Ile Gly Gly Ser Leu Ser Pro Thr Val Gly Lys
65 70 75 80

Val Asp Arg Asn Gly Glu Val Ser Val Ile Ala Ile Ser Ala Gly Leu
85 90 95

Ser Gly Gln Leu Thr Gly Ile Glu Asn Ile Glu Phe Lys Met Leu Cys
100 105 110

Met Gly Phe Lys Arg Lys Glu Ile Lys Ala Met Thr Pro Lys Ile Ile
115 120 125

Glu Phe Ser Glu Leu Gly Glu Phe Ile Tyr Gln Pro Val Lys Lys Tyr
130 135 140

Ser Ser Gly Met Arg Ala Lys Leu Gly Phe Ser Ile Asn Ile Thr Val
145 150 155 160

Asn Pro Asp Ile Leu Val Ile Asp Glu Ala Leu Ser Val Gly Asp Gln
165 170 175

Thr Phe Ala Gln Lys Cys Leu Asp Lys Ile Tyr Glu Phe Lys Glu Gln
180 185 190

Asn Lys Thr Ile Phe Phe Val Ser His Asn Leu Gly Gln Val Arg Gln
195 200 205

Phe Cys Thr Lys Ile Ala Trp Ile Glu Gly Gly Lys Leu Lys Asp Tyr
210 215 220

Gly Glu Leu Asp Asp Val Leu Pro Lys Tyr Glu Ala Phe Leu Asn Asp
225 230 235 240

Phe Lys Lys Lys Ser Lys Ala Glu Gln Lys Glu Phe Arg Asn Lys Leu
245 250 255

Asp Glu Ser Arg Phe Val Ile Lys
260

<210> 45
<211> 738
<212> DNA
<213> Staphylococcus aureus

<400> 45
ataaggtgaa gacacataaa acaatatatc ttagtaagca tgcaacactc ttttttgttt 60

attcataaca acaaaaaaga attaaaggag gagtcttatt atggctcgat tcagaggttc 120

aaactggaaa aaatctcgtc gtttaggtat ctctttaagc ggtactggta aagaattaga 180

aaaacgtcct tacgcaccag gacaacatgg tccaaaccaa cgtaaaaaat tatcagaata 240

tggtttacaa ttacgtgaaa aacaaaaatt acgttactta tatggaatga ctgaaagaca 300

attccgtaac acatttgaca tcgctggtaa aaaattcggt gtacacggtg aaaacttcat 360

gatcttatta gcaagtcgtt tagacgctgt tgtttattca ttaggtttag ctcgtactcg 420

tcgtcaagca cgtcaattag ttaaccacgg tcatatctta gtagatggta aacgtgttga 480

tattccatct tattctgtta aacctggtca aacaatttca gttcgtgaaa aatctcaaaa 540

attaaacatc atcgttgaat cagttgaaat caacaatttc gtacctgagt acttaaactt 600

tgatgctgac agcttaactg gtactttcgt acgtttacca gaacgtagcg aattacctgc 660

tgaaattaac gaacaattaa tccgttgagt actactcaag ataatacggt caataccaac 720

acccacaatt gtgggtgt 738

<210> 46
<211> 195
<212> PRT
<213> Staphylococcus aureus

<400> 46

Met Ala Arg Phe Arg Gly Ser Asn Trp Lys Lys Ser Arg Arg Leu Gly
1 5 10 15

Ile Ser Leu Ser Gly Thr Gly Lys Glu Leu Glu Lys Arg Pro Tyr Ala
20 25 30

Pro Gly Gln His Gly Pro Asn Gln Arg Lys Lys Leu Ser Glu Tyr Gly
35 40 45

Leu Gln Leu Arg Glu Lys Gln Lys Leu Arg Tyr Leu Tyr Gly Met Thr
50 55 60

Glu Arg Gln Phe Arg Asn Thr Phe Asp Ile Ala Gly Lys Lys Phe Gly
65 70 75 80

Val His Gly Glu Asn Phe Met Ile Leu Leu Ala Ser Arg Leu Asp Ala
85 90 95

Val Val Tyr Ser Leu Gly Leu Ala Arg Thr Arg Arg Gln Ala Arg Gln
100 105 110

Leu Val Asn His Gly His Ile Leu Val Asp Gly Lys Arg Val Asp Ile
115 120 125

Pro Ser Tyr Ser Val Lys Pro Gly Gln Thr Ile Ser Val Arg Glu Lys
130 135 140

Ser Gln Lys Leu Asn Ile Ile Val Glu Ser Val Glu Ile Asn Asn Phe
145 150 155 160

Val Pro Glu Tyr Leu Asn Phe Asp Ala Asp Ser Leu Thr Gly Thr Phe
165 170 175

Val Arg Leu Pro Glu Arg Ser Glu Leu Pro Ala Glu Ile Asn Glu Gln
180 185 190

Leu Ile Arg
195

<210> 47
<211> 980
<212> DNA
<213> Staphylococcus aureus

<400> 47
tgttgattgc acctgcttca gtcattgcta taactatttt aatttttaat ttaaccggtg 60

atgcactaag agatagattg ctgaaacaac ggggtgaata tgatgagtct cattgatata 120

caaaatttaa caataaagaa tactagtgag aaatctctta ttaaagggat tgatttgaaa 180

atttttagtc aacagattaa tgccttgatt ggagagagcg gcgctggaaa aagtttgatt 240

gctaaagctt tacttgaata tttaccattt gatttaagct gcacgtatga ttcgtaccaa 300

tttgatgggg aaaatgttag tagattgagt caatattatg gtcatacaat tggctatatt 360

tctcaaaatt atgcagaaag ttttaacgac catactaaat taggtaaaca gttaactgcg 420

atttatcgta agcattataa aggtagtaaa gaagaggctt tgtccaaagt tgataaggct 480

ttgtcgtggg ttaatttaca aagcaaagat atattaaata aatatagttt ccaactttct 540

gggggccaac ttgaacgcgt atacatagca agcgttctca tgttggagcc taaattaatc 600

attgcagacg aaccagttgc atcattggat gctttgaacg gtaatcaagt gatggattta 660

ttacagcata ttgtattaga acatggtcaa acattattta ttatcacaca taacttaagt 720

catgtattga aatattgtca gtacatttat gttttaaaag aaggtcaaat cattgaacga 780

ggtaatatta atcatttcaa gtatgagcat ttgcatccgt atactgaacg tctaattaaa 840

tatagaacac aattaaagag ggattactat gattgagtta aaacatgtga cttttggtta 900

taataaaaag cagatggtgc tacaagatat caatattact atacctgatg gagaaaatgt 960

tggtatttta ggcgaaagtg 980

<210> 48
<211> 258
<212> PRT
<213> Staphylococcus aureus

<400> 48

Met Met Ser Leu Ile Asp Ile Gln Asn Leu Thr Ile Lys Asn Thr Ser
1 5 10 15

Glu Lys Ser Leu Ile Lys Gly Ile Asp Leu Lys Ile Phe Ser Gln Gln
20 25 30

Ile Asn Ala Leu Ile Gly Glu Ser Gly Ala Gly Lys Ser Leu Ile Ala
35 40 45

Lys Ala Leu Leu Glu Tyr Leu Pro Phe Asp Leu Ser Cys Thr Tyr Asp
50 55 60

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Ser Trp Val Asn Leu Gln Ser Lys Asp Ile Leu Asn Lys Tyr Ser Phe
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Gln Leu Ser Gly Gly Gln Leu Glu Arg Val Tyr Ile Ala Ser Val Leu
145                 150                 155                 160

Met Leu Glu Pro Lys Leu Ile Ile Ala Asp Glu Pro Val Ala Ser Leu
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Asp Ala Leu Asn Gly Asn Gln Val Met Asp Leu Leu Gln His Ile Val
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Leu Glu His Gly Gln Thr Leu Phe Ile Ile Thr His Asn Leu Ser His
        195                 200                 205

Val Leu Lys Tyr Cys Gln Tyr Ile Tyr Val Leu Lys Glu Gly Gln Ile
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Ile Glu Arg Gly Asn Ile Asn His Phe Lys Tyr Glu His Leu His Pro
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35 40 45

Ile Gln Glu Lys Thr Phe Arg Ala Gly Glu Lys Val Glu Pro Ala Met
50 55 60

Ile Glu Asn Arg Arg Met Gln Tyr Leu Tyr Ala Asp Gly Asp Asn His
65 70 75 80

Val Phe Met Asp Asn Glu Ser Phe Glu Gln Thr Glu Leu Ser Ser Asp
85 90 95

Tyr Leu Lys Glu Glu Leu Asn Tyr Leu Lys Glu Gly Met Glu Val Gln
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Ile Gln Thr Tyr Glu Gly Glu Thr Ile Gly Val Glu Leu Pro Lys Thr
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Ala Thr Gly Ala Thr Lys Ser Ala Thr Val Glu Thr Gly Tyr Thr Leu
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Asp Asp His Val Phe Glu Leu Asp Ile Arg Glu Tyr Asp Ala Val Glu
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Gln Ile Met Lys Thr Tyr Gln Phe Asp Tyr Val Ile His Leu Ala Ala
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Asn Asn His Ile Lys Arg Phe Ile Phe Ala Ser Ser Ala Ala Val Tyr
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caaattcaag gtggatatga cttaacaccg caacaaaaac tgaaatatga catgaaatat 420

atacataaag gtagtttaat gatggaacta tatatatcaa ttagaacatt gatggttgtt 480

attacagggg aaggctcaag gtag 504

<210> 55
<211> 200
<212> PRT
<213> Staphylococcus aureus

<400> 55

Leu Asp Lys Leu Glu Glu Val Arg Lys Ser Tyr Tyr Pro Ile Lys Arg
1 5 10 15

Ala Ile Asp Leu Ile Leu Ser Ile Val Leu Leu Phe Leu Thr Leu Pro
20 25 30

Ile Met Val Ile Phe Ala Ile Ala Ile Val Ile Asp Ser Pro Gly Asn
35 40 45

Pro Ile Tyr Ser Gln Val Arg Val Gly Lys Met Gly Lys Leu Ile Lys
50 55 60

Ile Tyr Lys Leu Arg Ser Met Cys Lys Asn Ala Glu Lys Asn Gly Ala
65 70 75 80

Gln Trp Ala Asp Lys Asp Asp Asp Arg Ile Thr Asn Val Gly Lys Phe
85 90 95

Ile Arg Lys Thr Arg Ile Asp Glu Leu Pro Gln Leu Ile Asn Val Val
100 105 110

Lys Gly Glu Met Ser Phe Ile Gly Pro Arg Pro Glu Arg Pro Glu Phe
115 120 125

Val Glu Leu Phe Ser Ser Glu Val Ile Gly Phe Glu Gln Arg Cys Leu
130 135 140

Val Thr Pro Gly Leu Thr Gly Leu Ala Gln Ile Gln Gly Gly Tyr Asp
145 150 155 160

Leu Thr Pro Gln Gln Lys Leu Lys Tyr Asp Met Lys Tyr Ile His Lys
165 170 175

Gly Ser Leu Met Met Glu Leu Tyr Ile Ser Ile Arg Thr Leu Met Val
180 185 190

Val Ile Thr Gly Glu Gly Ser Arg
195 200

<210> 56
<211> 1044
<212> DNA
<213> Staphylococcus aureus

<400> 56
atgattgaac aactagatgc aagagttaat gtaattatta tcgaacattt agtaggtcca 60

attgacttta aacaagatat tttagctgtc aaagtgttag cacagttatt ctcgaaaatt 120

aaacctgatg ttatccattt acattcttcc aaagctggaa cggtcggacg aattgcgaag 180

ttcatttcga aatcgaaaga cacacgtata gtttttactg cacatggatg ggcttttaca 240

gagggtgtta aaccagctaa aaaatttcta tatttagtta tcgaaaaatt aatgtcactt 300

attacagata gcattatttg tgtttcagat ttcgataaac agttagcgtt aaaatatcga 360

tttaatcgat tgaaattaac cacaatacat aatggtattg cagatgttcc cgctgttaag 420

caaacgctaa aaagccaatc acataacaat attggcgaag tagttggaat gttgcctaat 480

aaacaagatt tacagattaa tgccccgaca aagcatcaat ttgttatgat tgcaagattt 540

gcttatccaa aattgccaca aaatctaatc gcggcaatag agatattgaa attacataac 600

agtaatcatg cgcattttac atttataggc gatggaccta cattaaatga ttgtcagcaa 660

caagttgtac aagctgggtt agaaaatgat gtcacatttt tgggcaatgt cattaatgcg 720

agtcatttat tatcacaata cgatacgttt attttaataa gtaagcatga aggtttgcca 780

attagcatta tagaagctat ggctacaggt ttgcctgtta tagccagtca tgttggcggt 840

atttcagaat tagtagctga taatggtata tgtatgatga acaaccaacc cgaaactatt 900

gctaaagtcc tggaaaaata tttaatagac agtgattaca tcaaaatgag taatcaatct 960

agaaaacgtt atttagaatg ttttactgag gagaaaatga ttaaagaagt ggaagacgtt 1020

tataatggaa aatcaacaca atag 1044

<210> 57
<211> 388
<212> PRT
<213> Staphylococcus aureus

<400> 57

Leu Lys Ile Ile Tyr Cys Ile Thr Lys Ala Asp Asn Gly Gly Ala Gln
1 5 10 15

Thr His Leu Ile Gln Leu Ala Asn His Phe Cys Val His Asn Asp Val
20 25 30

Tyr Val Ile Val Gly Asn His Gly Pro Met Ile Glu Gln Leu Asp Ala
35 40 45

Arg Val Asn Val Ile Ile Ile Glu His Leu Val Gly Pro Ile Asp Phe
50 55 60

Lys Gln Asp Ile Leu Ala Val Lys Val Leu Ala Gln Leu Phe Ser Lys
65 70 75 80

Ile Lys Pro Asp Val Ile His Leu His Ser Ser Lys Ala Gly Thr Val

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                85                  90                  95

Gly Arg Ile Ala Lys Phe Ile Ser Lys Ser Lys Asp Thr Arg Ile Val
            100                 105                 110

Phe Thr Ala His Gly Trp Ala Phe Thr Glu Gly Val Lys Pro Ala Lys
        115                 120                 125

Lys Phe Leu Tyr Leu Val Ile Glu Lys Leu Met Ser Leu Ile Thr Asp
    130                 135                 140

Ser Ile Ile Cys Val Ser Asp Phe Asp Lys Gln Leu Ala Leu Lys Tyr
145                 150                 155                 160

Arg Phe Asn Arg Leu Lys Leu Thr Thr Ile His Asn Gly Ile Ala Asp
                165                 170                 175

Val Pro Ala Val Lys Gln Thr Leu Lys Ser Gln Ser His Asn Asn Ile
            180                 185                 190

Gly Glu Val Val Gly Met Leu Pro Asn Lys Gln Asp Leu Gln Ile Asn
        195                 200                 205

Ala Pro Thr Lys His Gln Phe Val Met Ile Ala Arg Phe Ala Tyr Pro
    210                 215                 220

Lys Leu Pro Gln Asn Leu Ile Ala Ala Ile Glu Ile Leu Lys Leu His
225                 230                 235                 240

Asn Ser Asn His Ala His Phe Thr Phe Ile Gly Asp Gly Pro Thr Leu
                245                 250                 255

Asn Asp Cys Gln Gln Gln Val Val Gln Ala Gly Leu Glu Asn Asp Val
            260                 265                 270

Thr Phe Leu Gly Asn Val Ile Asn Ala Ser His Leu Leu Ser Gln Tyr
        275                 280                 285

Asp Thr Phe Ile Leu Ile Ser Lys His Glu Gly Leu Pro Ile Ser Ile
    290                 295                 300

Ile Glu Ala Met Ala Thr Gly Leu Pro Val Ile Ala Ser His Val Gly
305                 310                 315                 320

Gly Ile Ser Glu Leu Val Ala Asp Asn Gly Ile Cys Met Met Asn Asn
                325                 330                 335

Gln Pro Glu Thr Ile Ala Lys Val Leu Glu Lys Tyr Leu Ile Asp Ser
            340                 345                 350

Asp Tyr Ile Lys Met Ser Asn Gln Ser Arg Lys Arg Tyr Leu Glu Cys
        355                 360                 365

Phe Thr Glu Glu Lys Met Ile Lys Glu Val Glu Asp Val Tyr Asn Gly
    370                 375                 380

Lys Ser Thr Gln
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385

<210> 58
<211> 1239
<212> DNA
<213> Staphylococcus aureus

<400> 58
atggaaaatc aacacaatag taaattacta acattgttac ttatcggttt agcggttttt 60

attcagcaat cttcggttat tgccggtgtg aatgtttcta tagctgactt tatcacatta 120

ctaatattag tttatttact gtttttcgct aaccatttat taaaggcaaa tcatttttta 180

cagtttttca ttattttgta tacatatcgt atgattatta cgctttgttt gctatttttt 240

gatgatttga tatttattac ggttaaggaa gttcttgcat ctacagttaa atatgcattt 300

gtagtcattt atttctattt agggatgatc atctttaagt taggtaatag caaaaaagtg 360

atcgttacct cttatattat aagcagtgtg actataggtc tattttgtat tatagctggt 420

ttgaacaagt ccccttttact aatgaaattg ttatattttg atgaaatacg ttcaaaagga 480

ttaatgaatg accctaacta tttcgcgatg acacagatta ttacattggt acttgcttac 540

aagtatattc ataattacat attcaaggtc cttgcatgtg gtattttgct atggtcttta 600

actacaacgg ggtctaagac tgcgtttatc atattaatcg tcttagccat ttatttcttt 660

attaaaaagt tatttagtag aaatgcggta agtgttgtga gtatgtcagt gattatgctg 720

atattacttt gttttacctt ttataatatc aactactatt tattccaatt aagcgacctt 780

gatgccttac cgtcattaga tcgaatggcg tctatttttg aagagggctt tgcatcatta 840

aatgatagtg ggtctgagcg aagtgttgta tggataaatg ccatttcagt aattaaatat 900

acactaggtt ttggtgtcgg attagtggat tatgtacata ttggctcgca aattaatggt 960

attttacttg ttgcccataa tacatatttg cagatctttg cggaatgggg cattttattc 1020

ggtgcattat ttatcatatt tatgctttat ttactgtttg aattatttag atttaacatt 1080

tctgggaaaa atgtaacagc aattgttgta atgttgacga tgctgattta ctttttaaca 1140

gtatcattta ataactcaag atatgtcgct tttattttag gaattatcgt ctttattgtt 1200

caatatgaaa agatggaaag ggatcgtaat gaagagtga 1239

<210> 59
<211> 412
<212> PRT
<213> Staphylococcus aureus

<400> 59

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Met Glu Asn Gln His Asn Ser Lys Leu Leu Thr Leu Leu Leu Ile Gly
1               5                  10                  15

Leu Ala Val Phe Ile Gln Gln Ser Ser Val Ile Ala Gly Val Asn Val
            20                  25                  30

Ser Ile Ala Asp Phe Ile Thr Leu Leu Ile Leu Val Tyr Leu Leu Phe
        35                  40                  45

Phe Ala Asn His Leu Leu Lys Ala Asn His Phe Leu Gln Phe Phe Ile
    50                  55                  60

Ile Leu Tyr Thr Tyr Arg Met Ile Ile Thr Leu Cys Leu Leu Phe Phe
65                  70                  75                  80

Asp Asp Leu Ile Phe Ile Thr Val Lys Glu Val Leu Ala Ser Thr Val
                85                  90                  95

Lys Tyr Ala Phe Val Val Ile Tyr Phe Tyr Leu Gly Met Ile Ile Phe
            100                 105                 110

Lys Leu Gly Asn Ser Lys Lys Val Ile Val Thr Ser Tyr Ile Ile Ser
        115                 120                 125

Ser Val Thr Ile Gly Leu Phe Cys Ile Ile Ala Gly Leu Asn Lys Ser
    130                 135                 140

Pro Leu Leu Met Lys Leu Leu Tyr Phe Asp Glu Ile Arg Ser Lys Gly
145                 150                 155                 160

Leu Met Asn Asp Pro Asn Tyr Phe Ala Met Thr Gln Ile Ile Thr Leu
                165                 170                 175

Val Leu Ala Tyr Lys Tyr Ile His Asn Tyr Ile Phe Lys Val Leu Ala
            180                 185                 190

Cys Gly Ile Leu Leu Trp Ser Leu Thr Thr Thr Gly Ser Lys Thr Ala
        195                 200                 205

Phe Ile Ile Leu Ile Val Leu Ala Ile Tyr Phe Phe Ile Lys Lys Leu
    210                 215                 220

Phe Ser Arg Asn Ala Val Ser Val Val Ser Met Ser Val Ile Met Leu
225                 230                 235                 240

Ile Leu Leu Cys Phe Thr Phe Tyr Asn Ile Asn Tyr Tyr Leu Phe Gln
                245                 250                 255

Leu Ser Asp Leu Asp Ala Leu Pro Ser Leu Asp Arg Met Ala Ser Ile
            260                 265                 270

Phe Glu Glu Gly Phe Ala Ser Leu Asn Asp Ser Gly Ser Glu Arg Ser
        275                 280                 285

Val Val Trp Ile Asn Ala Ile Ser Val Ile Lys Tyr Thr Leu Gly Phe
    290                 295                 300
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Gly Val Gly Leu Val Asp Tyr Val His Ile Gly Ser Gln Ile Asn Gly
305 310 315 320

Ile Leu Leu Val Ala His Asn Thr Tyr Leu Gln Ile Phe Ala Glu Trp
325 330 335

Gly Ile Leu Phe Gly Ala Leu Phe Ile Ile Phe Met Leu Tyr Leu Leu
340 345 350

Phe Glu Leu Phe Arg Phe Asn Ile Ser Gly Lys Asn Val Thr Ala Ile
355 360 365

Val Val Met Leu Thr Met Leu Ile Tyr Phe Leu Thr Val Ser Phe Asn
370 375 380

Asn Ser Arg Tyr Val Ala Phe Ile Leu Gly Ile Ile Val Phe Ile Val
385 390 395 400

Gln Tyr Glu Lys Met Glu Arg Asp Arg Asn Glu Glu
405 410

<210> 60
<211> 1455
<212> DNA
<213> Staphylococcus aureus

<400> 60
atgaaaagat ggaaagggat cgtaatgaag agtgattcac taaaagaaaa tattatttat 60

caagggctat accaattgat tagaacgatg acaccactga ttacaatacc cattatttca 120

cgtgcatttg gtcccagtgg tgtgggtatt gtttcatttt ctttcaatat cgtgcaatac 180

tttttgatga ttgcaagtgt tggcgttcag ttatatttta atagagttat cgcgaagtcc 240

gttaacgaca aacggcaatt gtcacagcag ttttgggata tctttgtcag taaattattt 300

ttagcgttaa cagtttttgc gatgtatatg gtcgtaatta ctatatttat tgatgattac 360

tatcttattt tcctactaca aggaatctat attataggtg cagcactcga tatttcatgg 420

ttttatgctg gaactgaaaa gtttaaaatt cctagcctca gtaatattgt tgcgtctggt 480

attgtattaa gtgtagttgt tatttttgtc aaagatcaat cagatttatc attgtatgta 540

tttactattg ctattgtgac ggtattaaac caattacctt tgtttatcta tttaaaacga 600

tacattagct ttgtttcggt taattggata cacgtctggc aattgtttcg ttcgtcatta 660

gcatacttat taccaaatgg acagctcaac ttatatacta gtatttcttg cgttgttctt 720

ggtttagtag gtacatacca acaagttggt atcttttcta acgcatttaa tattttaacg 780

gtcgcaatca taatgattaa tacatttgat cttgtaatga ttccgcgtat taccaaaatg 840

tctatccagc aatcacatag tttaactaaa acgttagcta ataatatgaa tattcaattg 900

atattaacaa tacctatggt ctttggttta attgcaatta tgccatcatt ttatttatgg 960

ttctttggtg aggaattcgc atcaactgtc ccattgatga ccattttagc gatacttgta 1020

ttaatcattc ctttaaatat gttgataagc aggcaatatt tattaatagt gaataaaata 1080

agattatata atgcgtcaat tactattggt gcagtgataa acctagtatt atgtattatt 1140

ttgatatatt tttatggaat ttacggtgct gctattgcgc gtttaattac agagtttttc 1200

ttgctcattt ggcgatttat tgatattact aaaatcaatg tgaagttgaa tattgtaagt 1260

acgattcaat gtgtcattgc tgctgttatg atgtttattg tgcttggtgt ggtcaatcat 1320

tatttgcccc ctacaatgta cgctacgctg ctattaattg cgattggtat agtagtttat 1380

cttttattaa tgatgactat gaaaaatcaa tacgtatggc aaatattgag gcatcttcga 1440

cataaaacaa tttaa 1455

<210> 61
<211> 476
<212> PRT
<213> Staphylococcus aureus

<400> 61

Met Lys Ser Asp Ser Leu Lys Glu Asn Ile Ile Tyr Gln Gly Leu Tyr
1 5 10 15

Gln Leu Ile Arg Thr Met Thr Pro Leu Ile Thr Ile Pro Ile Ile Ser
20 25 30

Arg Ala Phe Gly Pro Ser Gly Val Gly Ile Val Ser Phe Ser Phe Asn
35 40 45

Ile Val Gln Tyr Phe Leu Met Ile Ala Ser Val Gly Val Gln Leu Tyr
50 55 60

Phe Asn Arg Val Ile Ala Lys Ser Val Asn Asp Lys Arg Gln Leu Ser
65 70 75 80

Gln Gln Phe Trp Asp Ile Phe Val Ser Lys Leu Phe Leu Ala Leu Thr
85 90 95

Val Phe Ala Met Tyr Met Val Val Ile Thr Ile Phe Ile Asp Asp Tyr
100 105 110

Tyr Leu Ile Phe Leu Leu Gln Gly Ile Tyr Ile Ile Gly Ala Ala Leu
115 120 125

Asp Ile Ser Trp Phe Tyr Ala Gly Thr Glu Lys Phe Lys Ile Pro Ser
130 135 140

Leu Ser Asn Ile Val Ala Ser Gly Ile Val Leu Ser Val Val Val Ile

145 150 155 160

Phe Val Lys Asp Gln Ser Asp Leu Ser Leu Tyr Val Phe Thr Ile Ala
165 170 175

Ile Val Thr Val Leu Asn Gln Leu Pro Leu Phe Ile Tyr Leu Lys Arg
180 185 190

Tyr Ile Ser Phe Val Ser Val Asn Trp Ile His Val Trp Gln Leu Phe
195 200 205

Arg Ser Ser Leu Ala Tyr Leu Leu Pro Asn Gly Gln Leu Asn Leu Tyr
210 215 220

Thr Ser Ile Ser Cys Val Val Leu Gly Leu Val Gly Thr Tyr Gln Gln
225 230 235 240

Val Gly Ile Phe Ser Asn Ala Phe Asn Ile Leu Thr Val Ala Ile Ile
245 250 255

Met Ile Asn Thr Phe Asp Leu Val Met Ile Pro Arg Ile Thr Lys Met
260 265 270

Ser Ile Gln Gln Ser His Ser Leu Thr Lys Thr Leu Ala Asn Asn Met
275 280 285

Asn Ile Gln Leu Ile Leu Thr Ile Pro Met Val Phe Gly Leu Ile Ala
290 295 300

Ile Met Pro Ser Phe Tyr Leu Trp Phe Phe Gly Glu Glu Phe Ala Ser
305 310 315 320

Thr Val Pro Leu Met Thr Ile Leu Ala Ile Leu Val Leu Ile Ile Pro
325 330 335

Leu Asn Met Leu Ile Ser Arg Gln Tyr Leu Leu Ile Val Asn Lys Ile
340 345 350

Arg Leu Tyr Asn Ala Ser Ile Thr Ile Gly Ala Val Ile Asn Leu Val
355 360 365

Leu Cys Ile Ile Leu Ile Tyr Phe Tyr Gly Ile Tyr Gly Ala Ala Ile
370 375 380

Ala Arg Leu Ile Thr Glu Phe Phe Leu Leu Ile Trp Arg Phe Ile Asp
385 390 395 400

Ile Thr Lys Ile Asn Val Lys Leu Asn Ile Val Ser Thr Ile Gln Cys
405 410 415

Val Ile Ala Ala Val Met Met Phe Ile Val Leu Gly Val Val Asn His
420 425 430

Tyr Leu Pro Pro Thr Met Tyr Ala Thr Leu Leu Leu Ile Ala Ile Gly
435 440 445

Ile Val Val Tyr Leu Leu Leu Met Met Thr Met Lys Asn Gln Tyr Val

450 455 460

Trp Gln Ile Leu Arg His Leu Arg His Lys Thr Ile
465 470 475